NOLOGY DEPT.

Gas Journal

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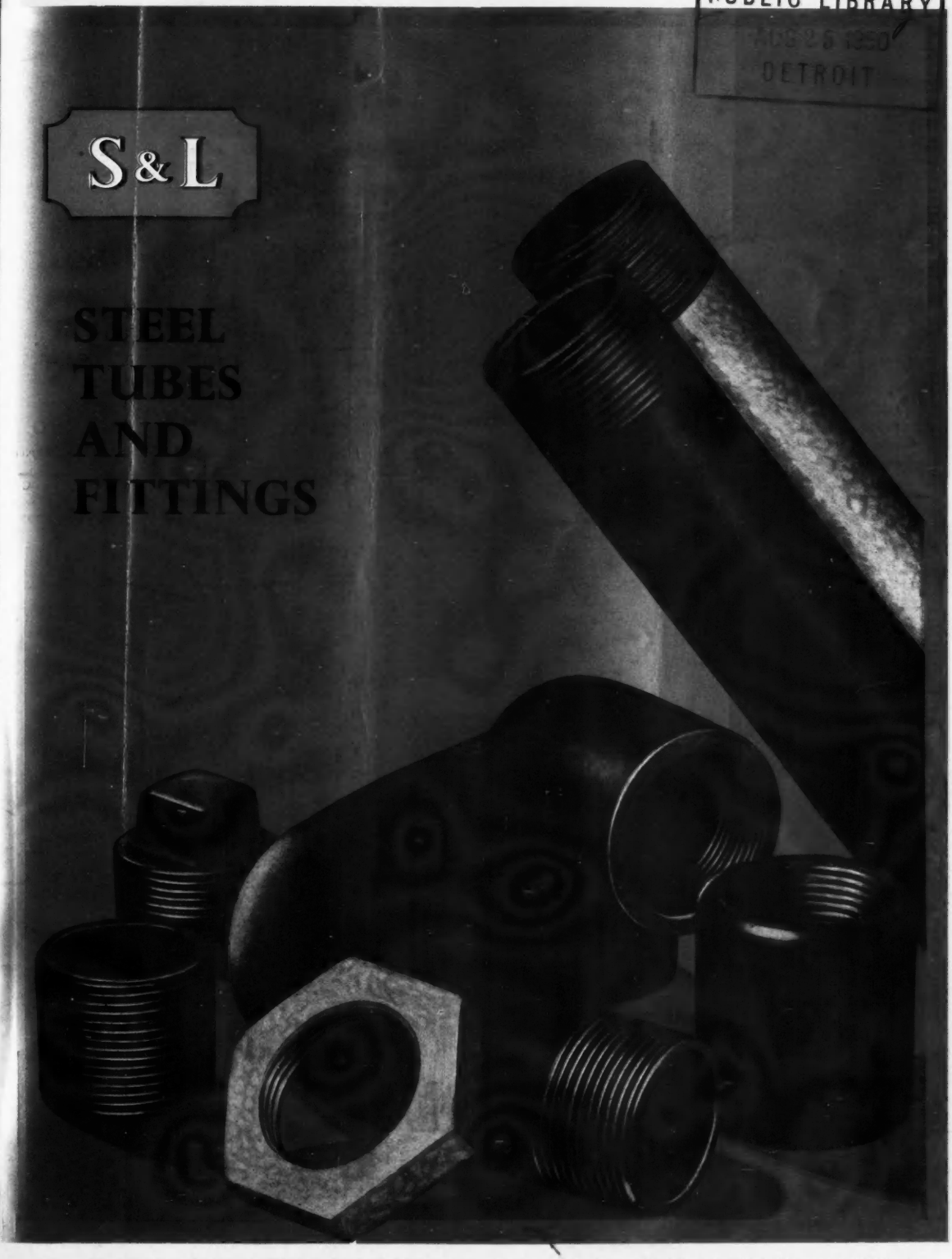

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HIGH SPEED, VERTICAL RECIPROCATING TYPE

For pressures up to 100 lb. per sq. inch

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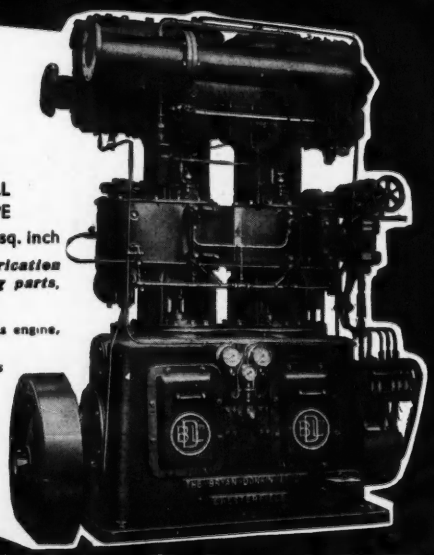

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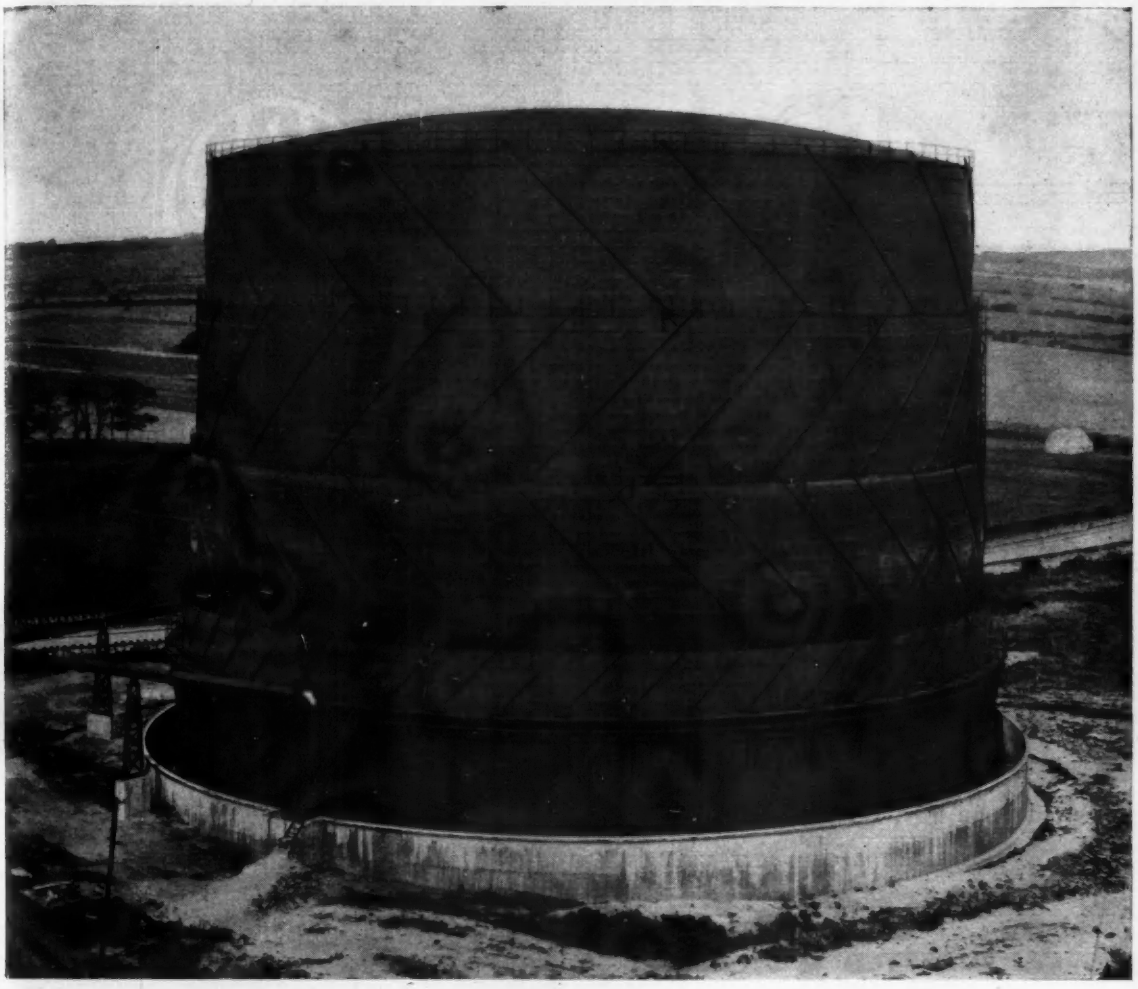

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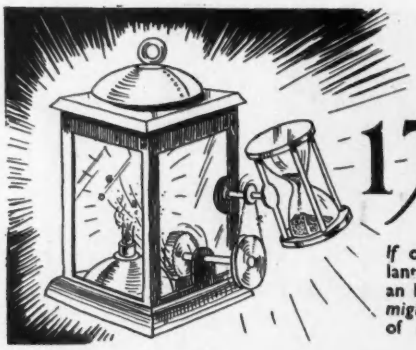

1769

If one John Box *had* invented a lantern to which was attached an hourglass and tinder box, this *might have been* the first example of controlled lighting ignition.

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THE TRADE MARK OF

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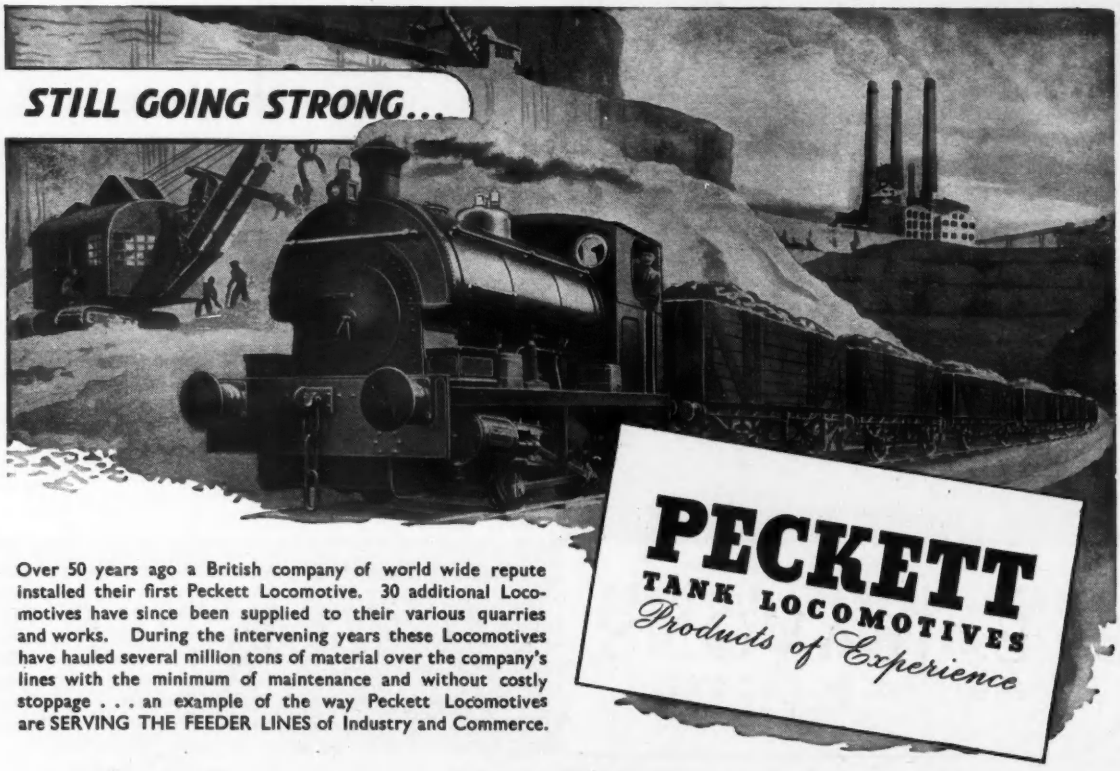

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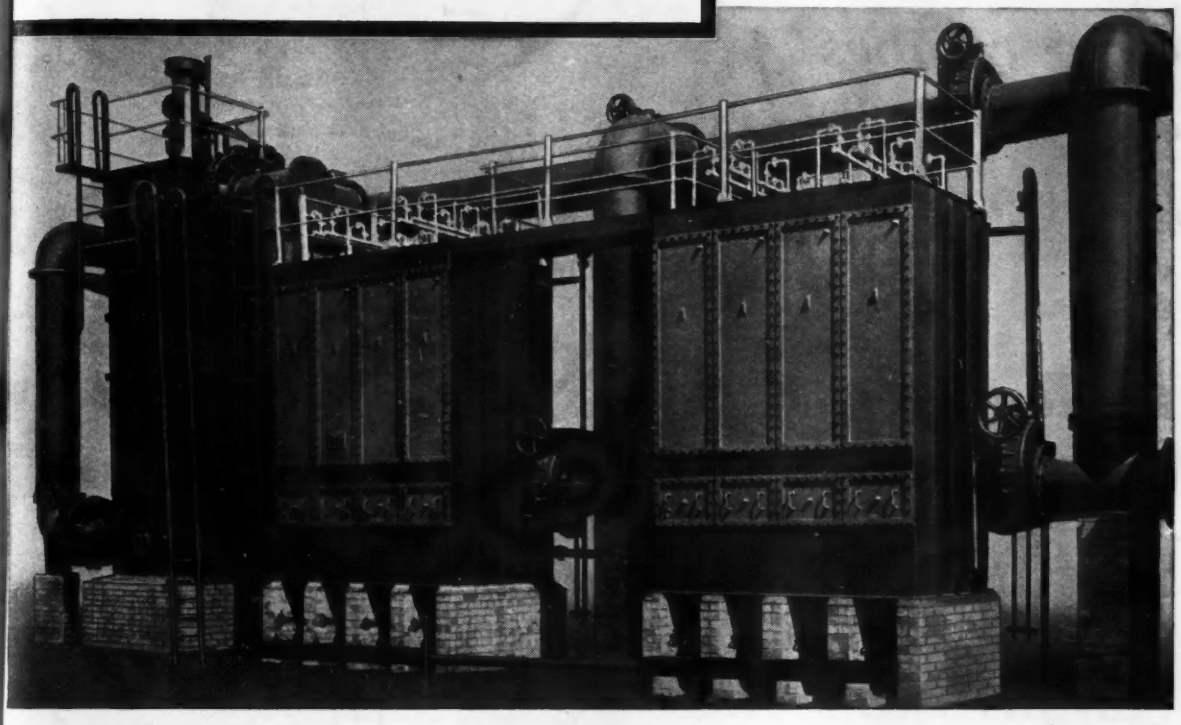

The photograph shows the neat arrangement of a W.W–D. Electro-detarrer and a Whessoe Multi-stage Static Ammonia Scrubber, with capacities of 4 million cu. ft. of gas per day, installed at the Darlington Works of the Northern Gas Board.

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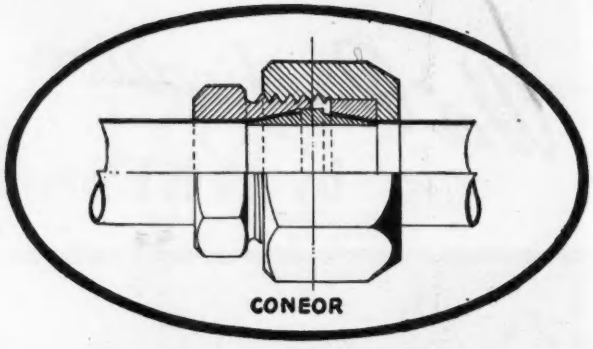

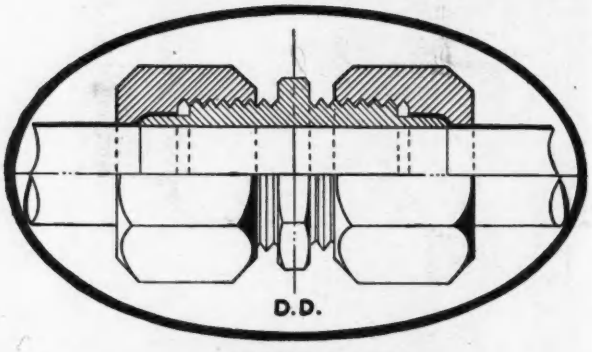

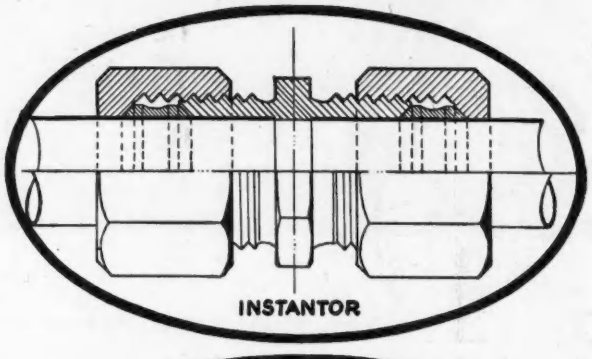

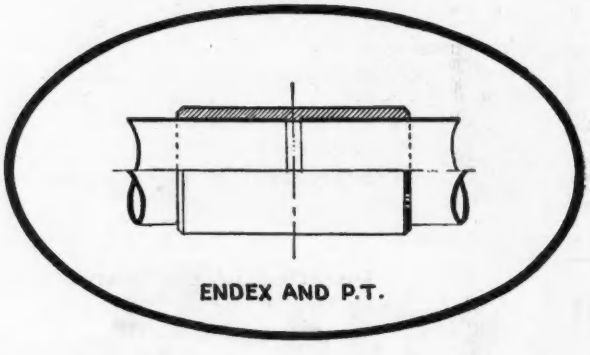

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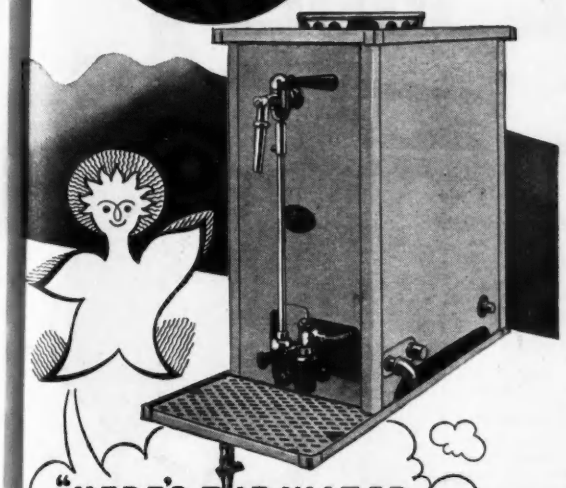

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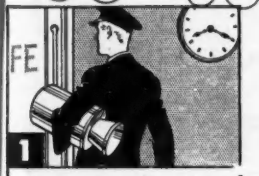
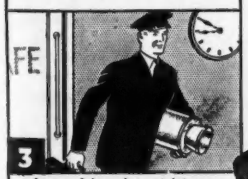


The Gasman arrives with the clean Ufix interior

The scaled interior is removed quickly and simply



Approx ½ hour later, job is completed, gas man leaves with scaled interior, this is cleaned ready for next servicing

THE interiors of the Ufix Boilers are interchangeable in a matter of minutes by simply emptying the water, undoing two couplings, removing the scaled interior, fitting clean one, and replacing couplings. In fact, Ufix is the only boiler in the United Kingdom in which the interior can be exchanged without disconnecting the boiler. This, combined with many other unique features makes the Ufix the most efficient and popular water heater obtainable today.

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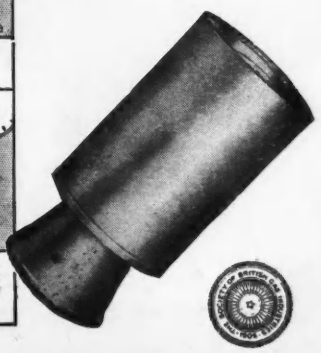

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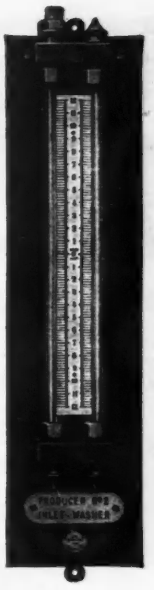

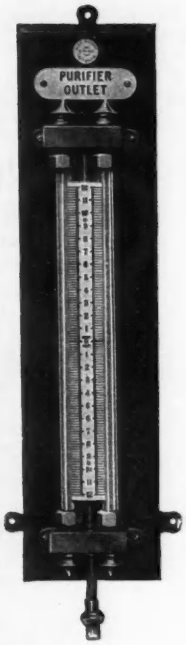

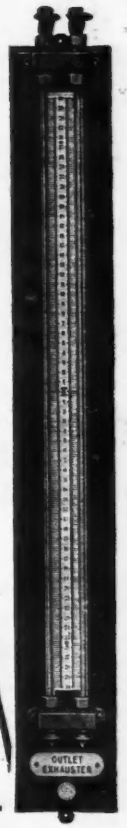

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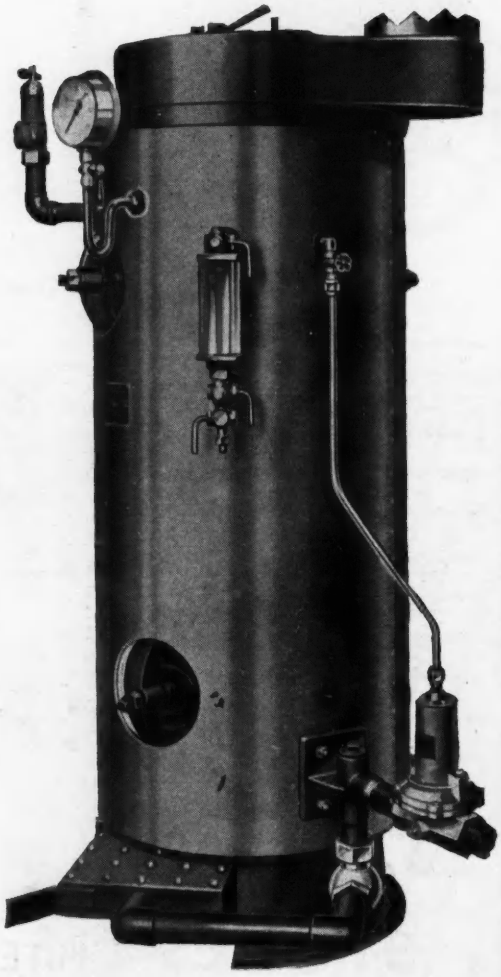

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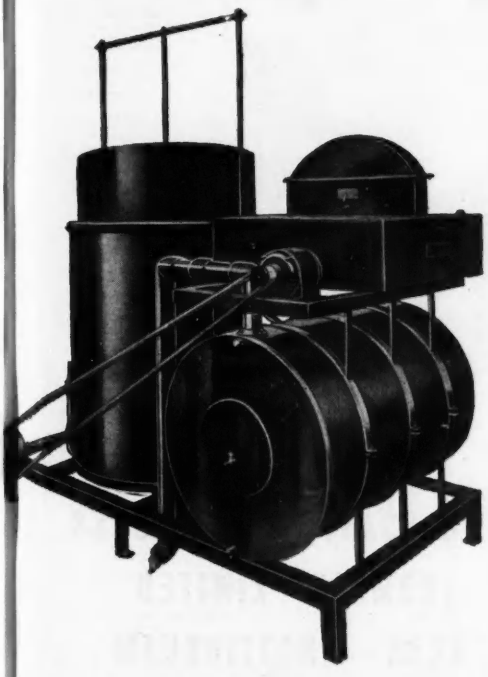

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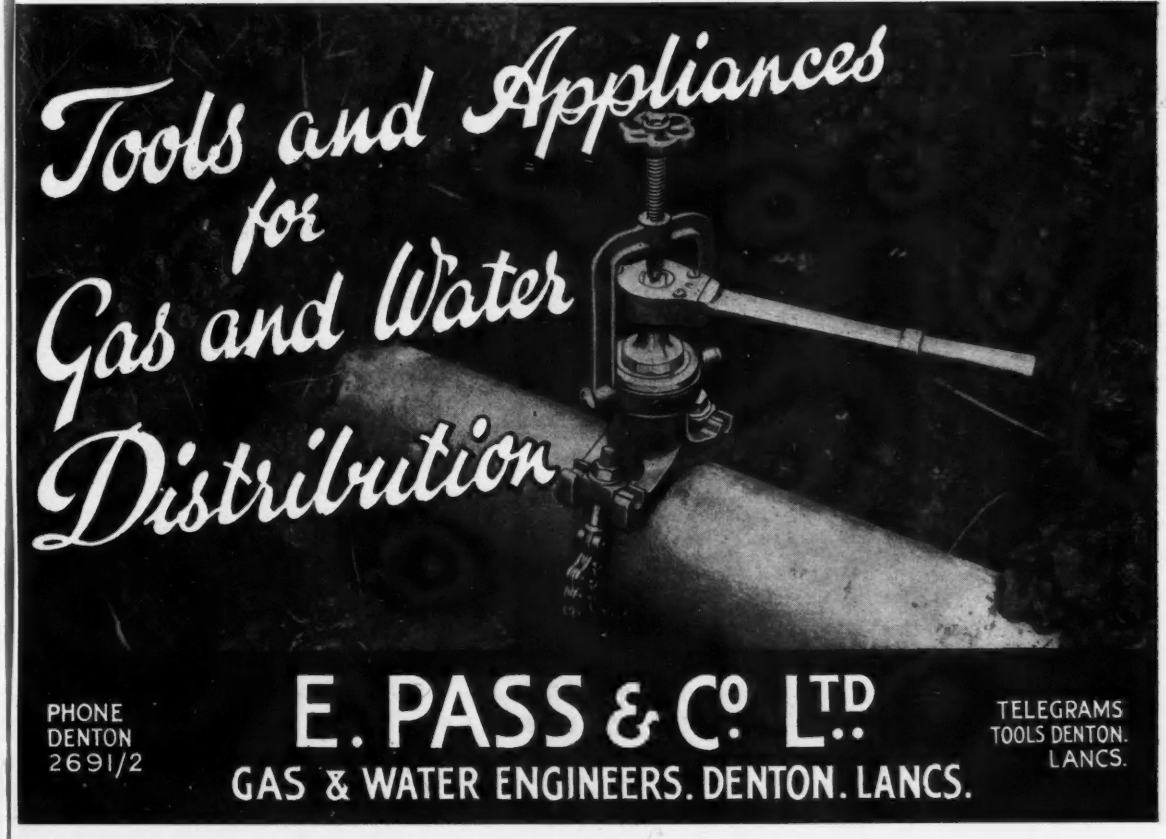

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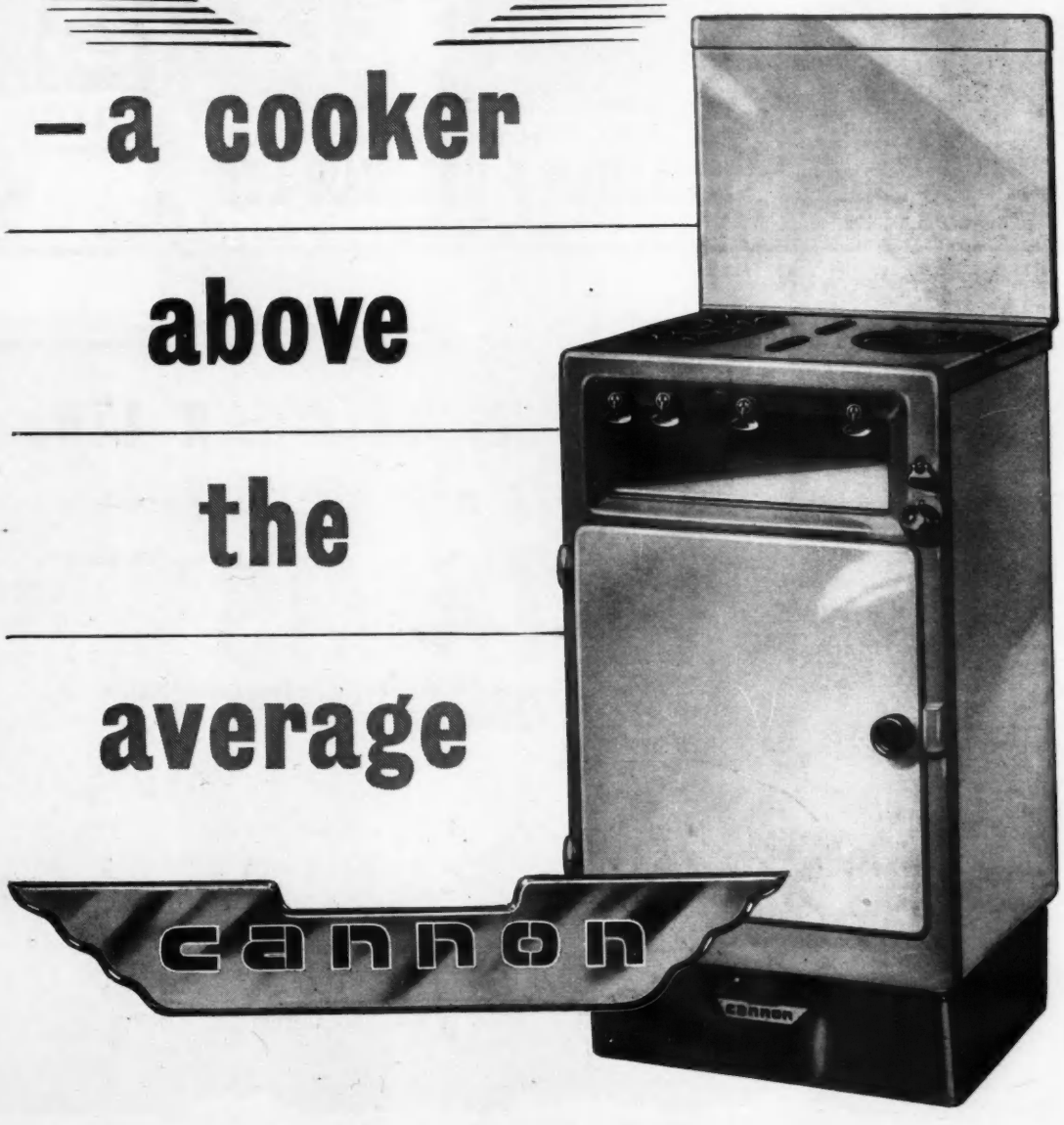

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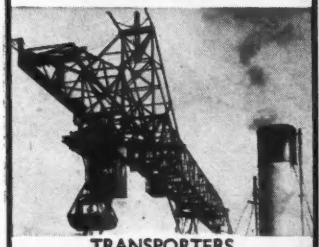

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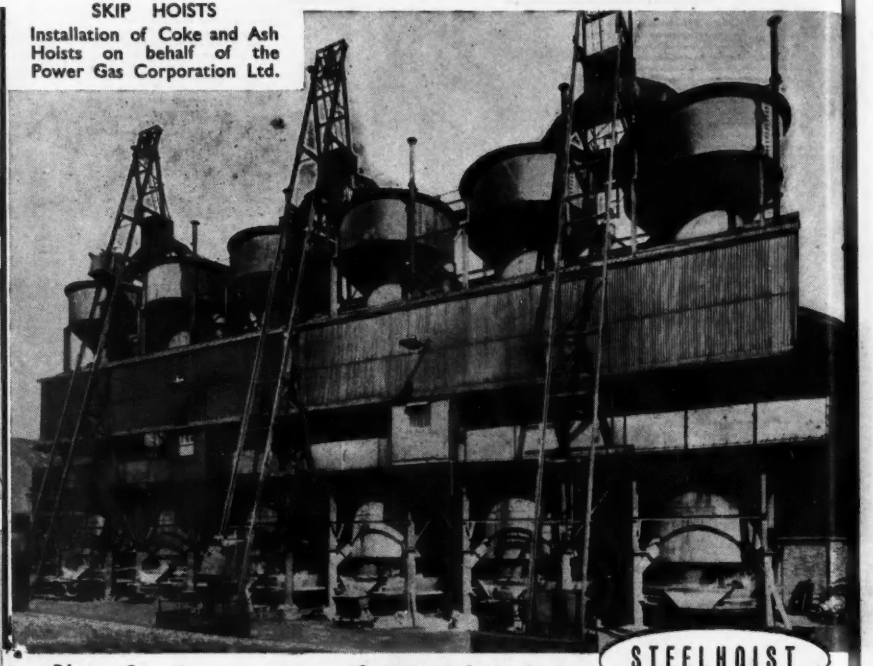

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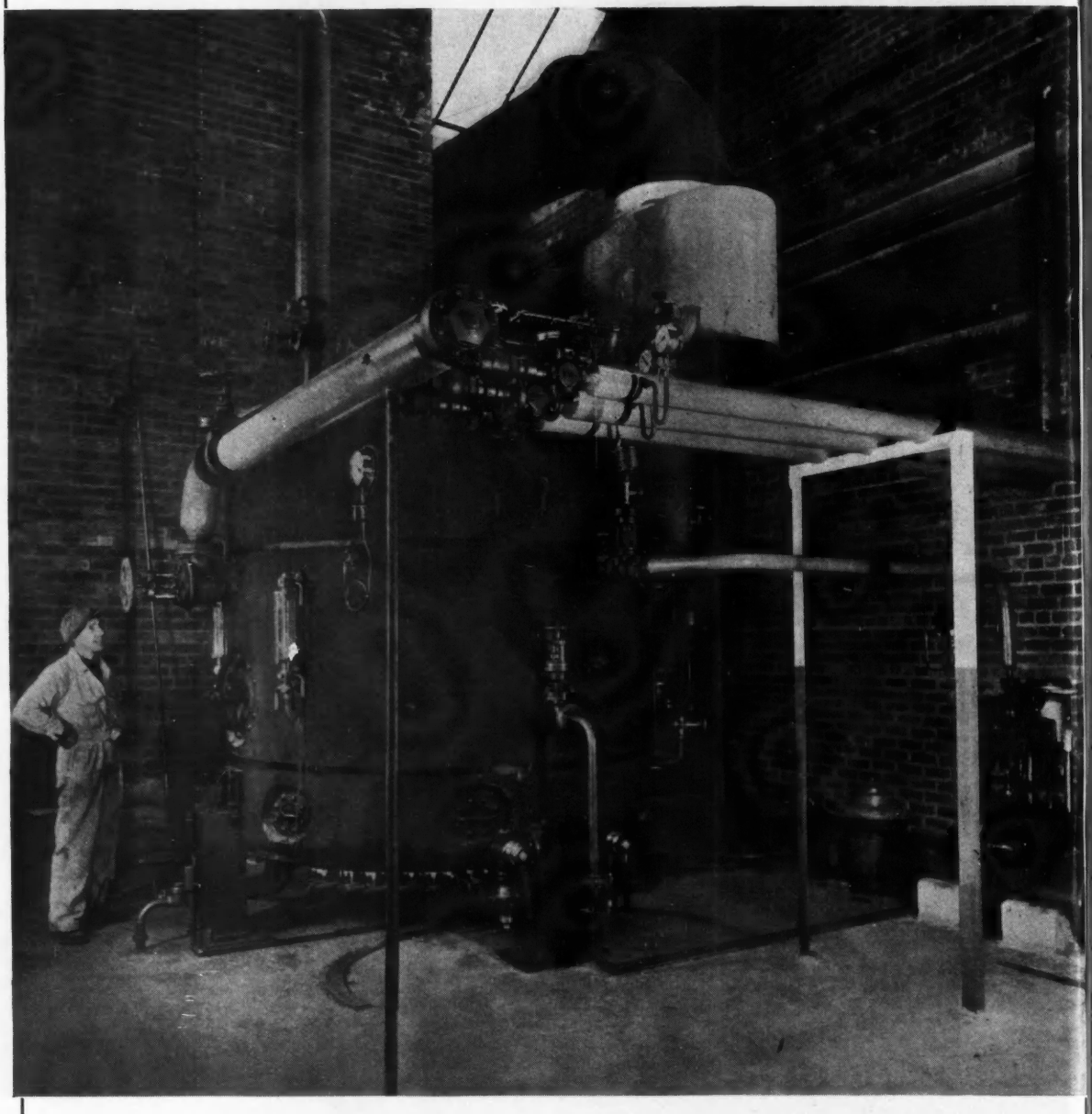

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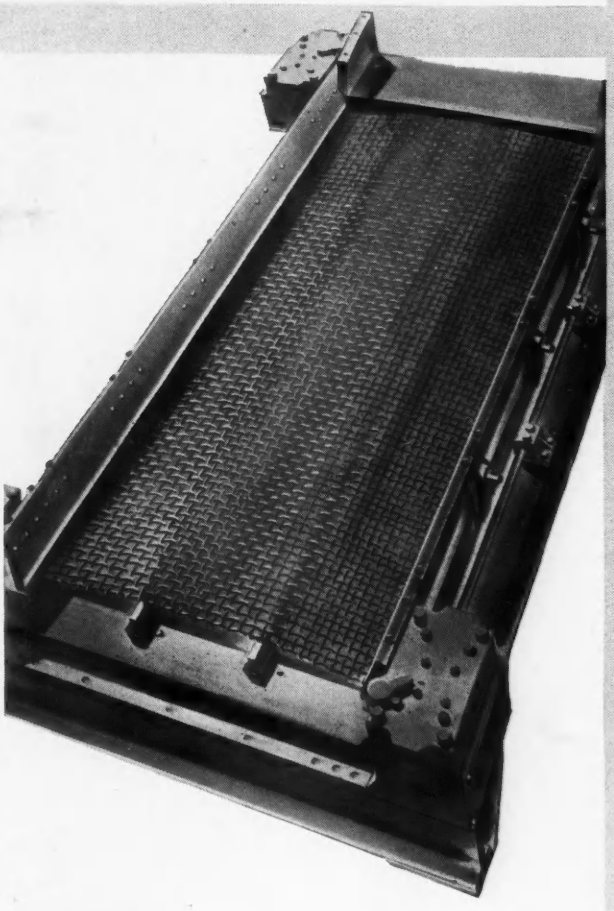

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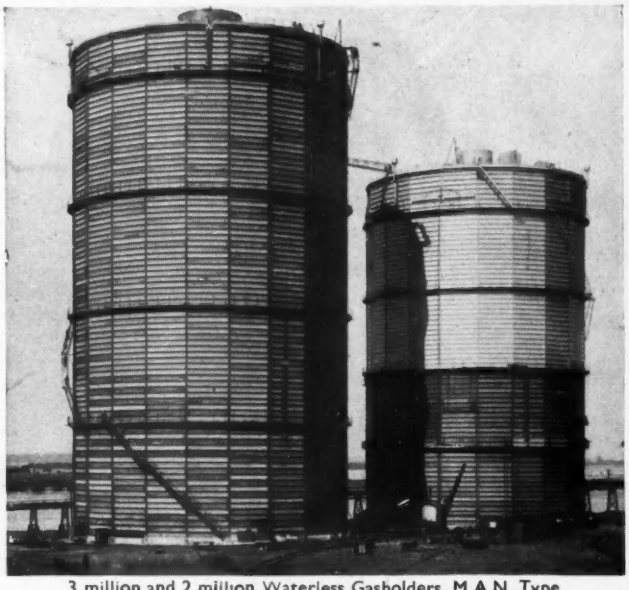

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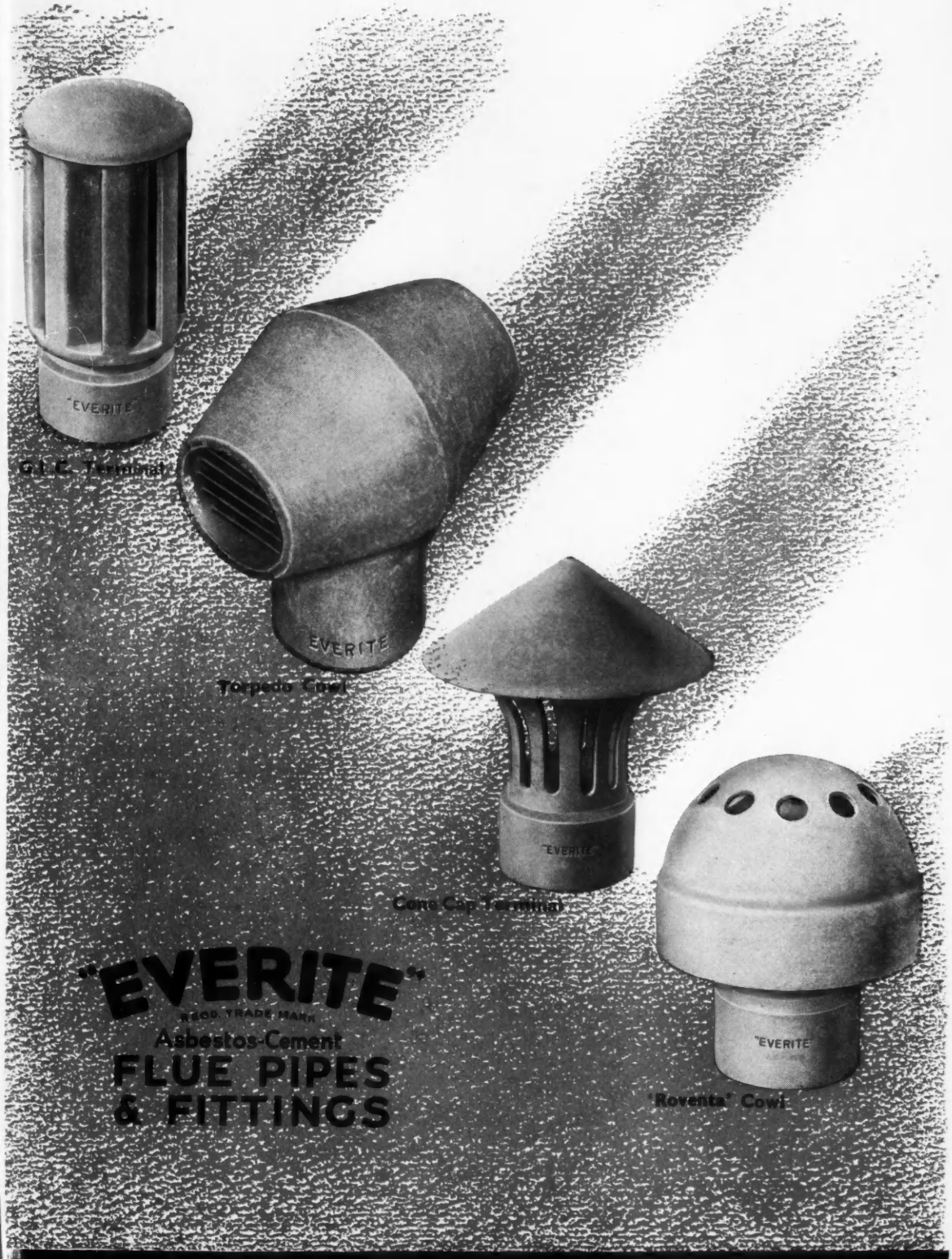

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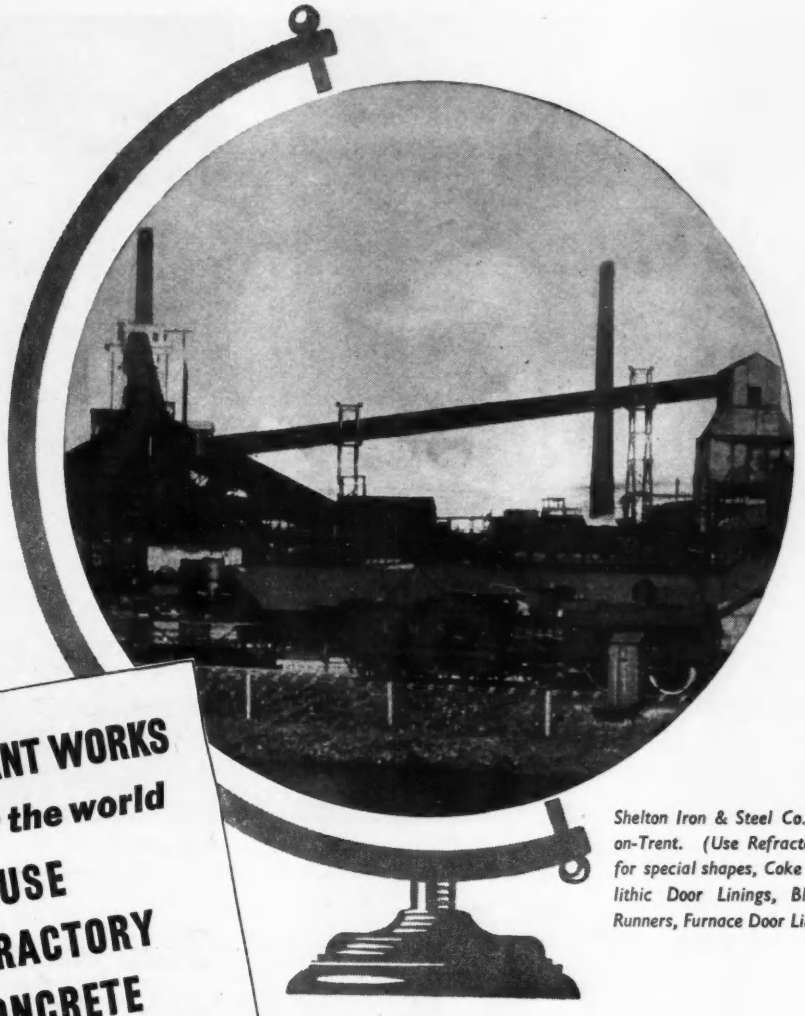
IDEAL BOILERS & RADIATORS LIMITED, IDEAL WORKS, HULL, YORKS



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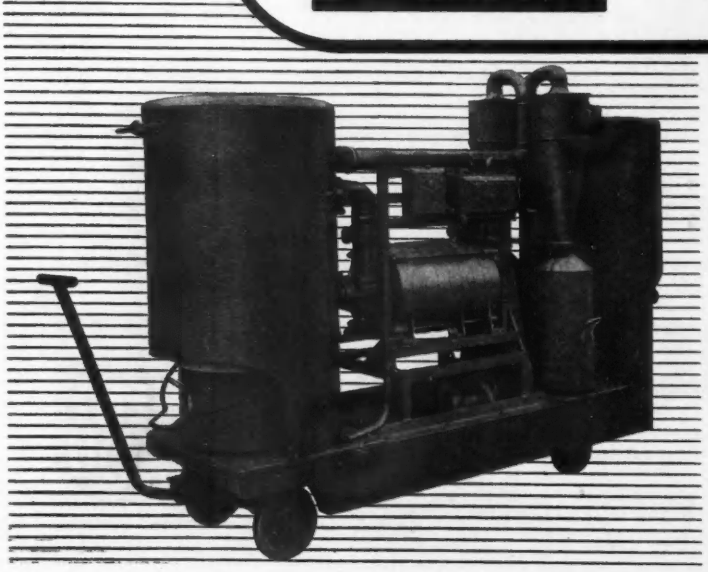

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&
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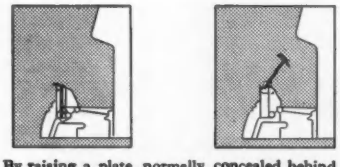

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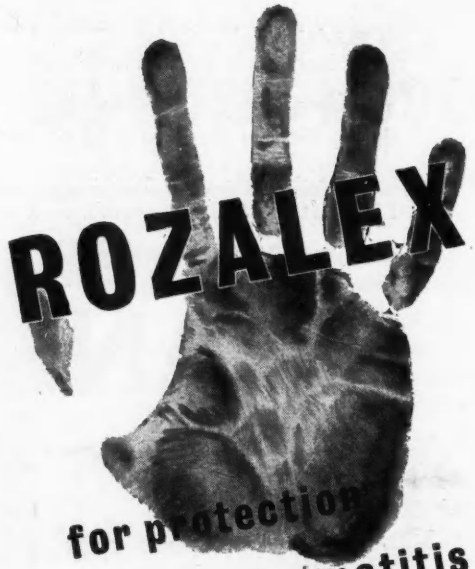

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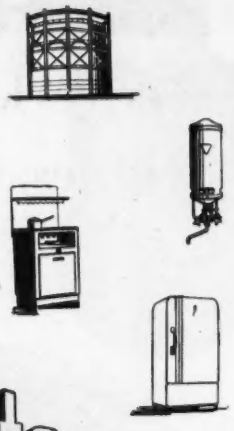

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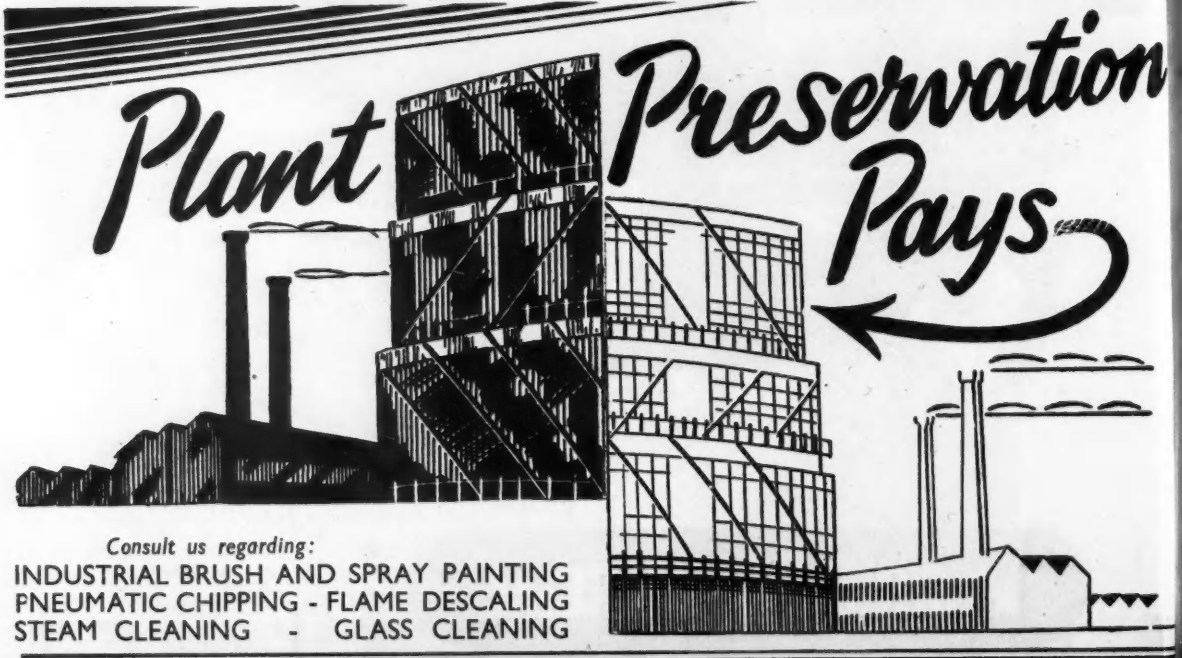

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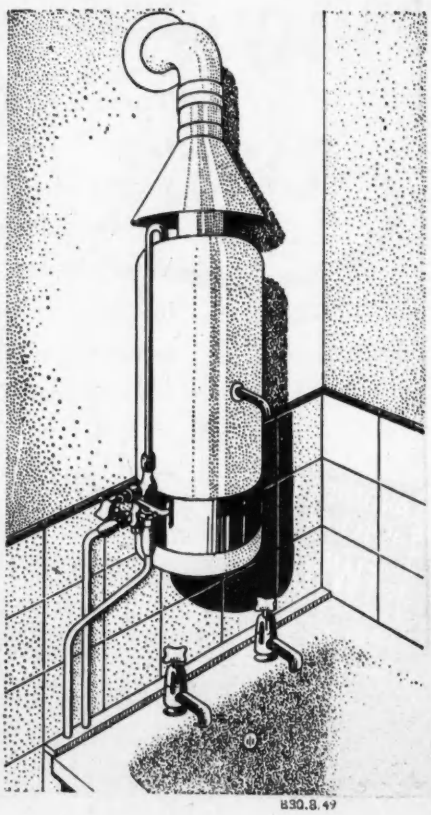
There are two connections to make, one for gas and one for water, and both are most easily made with lead pipe. The unique flexibility of lead pipe reduces to a minimum the time spent on bending pipe to meet the connection points without strain on the appliance. Lead pipe for gas and water distribution is supplied to B.S. 602. Lead compo pipe is supplied in varying thickness to meet the requirements of different areas.



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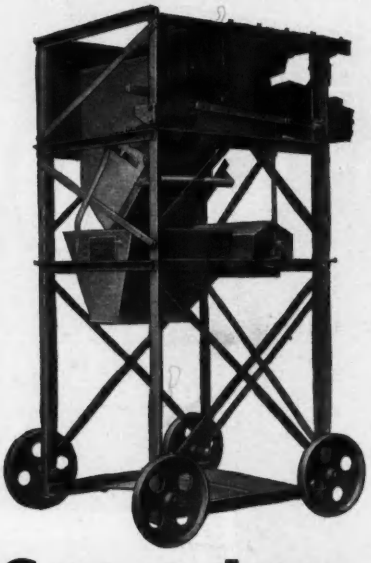

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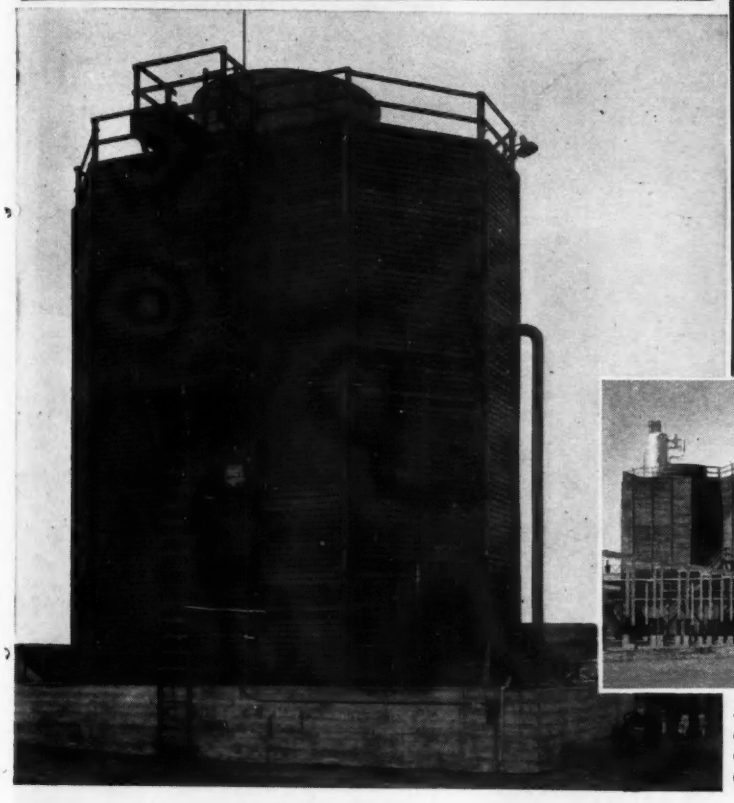

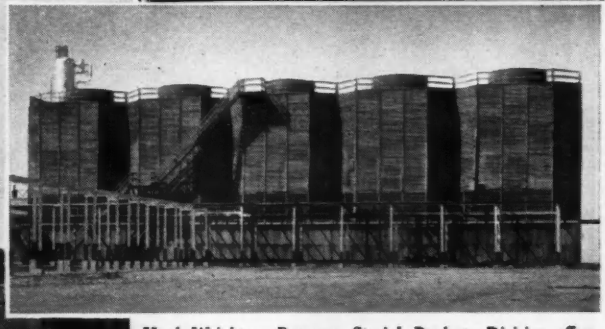

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More efficient water cooling at reduced cost

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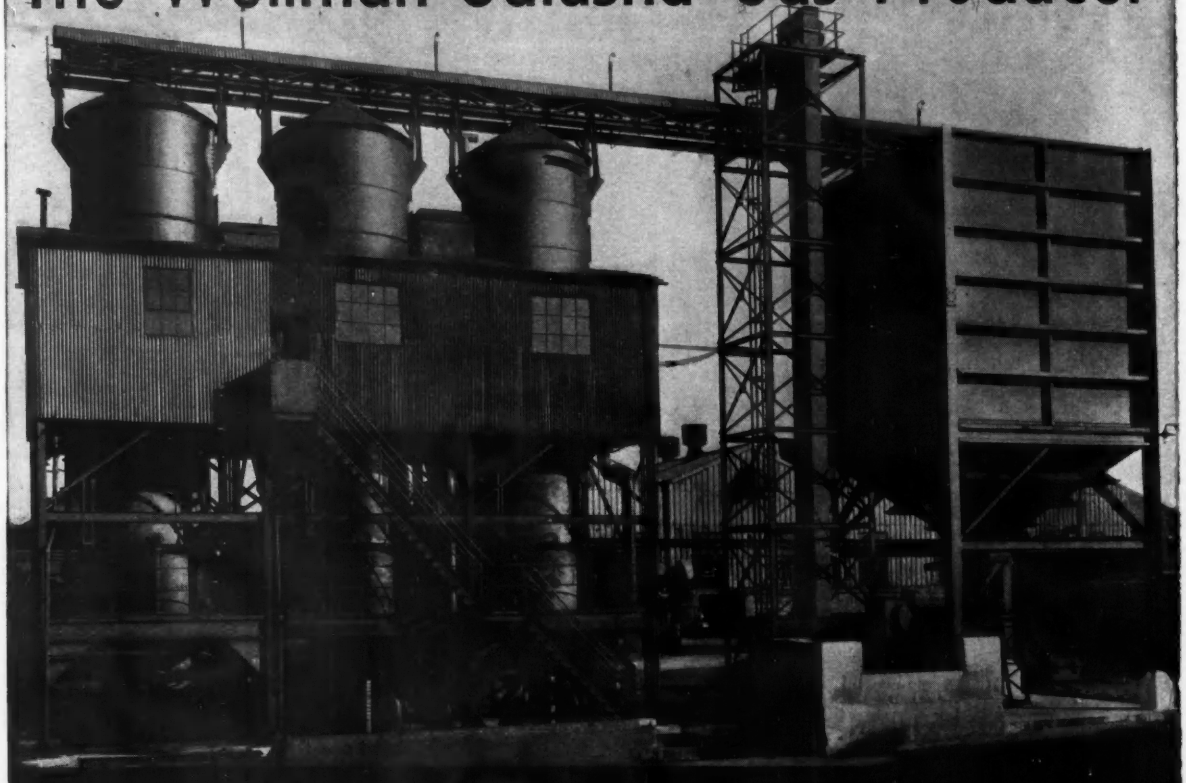
The Wellman-Galusha Gas Producer



4% CO_2 from Bituminous Fuels

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Below are typical readings from a 10' 0" diameter Wellman-Galusha Gas Producer when gasifying bituminous fuel:

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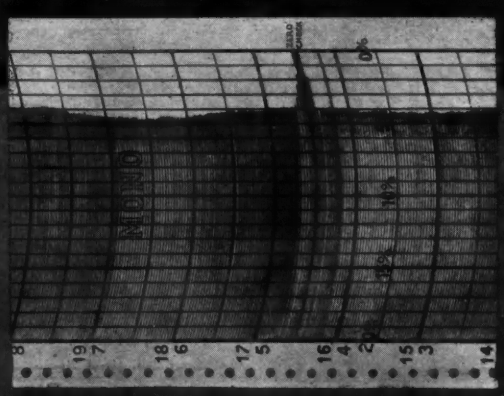
CO_2	4.2%
O_2	0.4%
CO	27.2%
CH_4	2.7%
H_2	14.3%
N_2	51.2% (by difference)

FUEL

Fuel—Bituminous Coal—Washed Nuts.
C.V.—159.2BTU/ft³ at 30", 60°F Satd. Gross.

SECTION CO_2 CHART



Wellman-Galusha Gas Producers can be supplied in three sizes, namely 6 ft., 8 ft. and 10 ft. diameters — equipped with agitator as desired.

We cordially invite you to write for our brochure entitled "The Wellman-Galusha Gas Producer".

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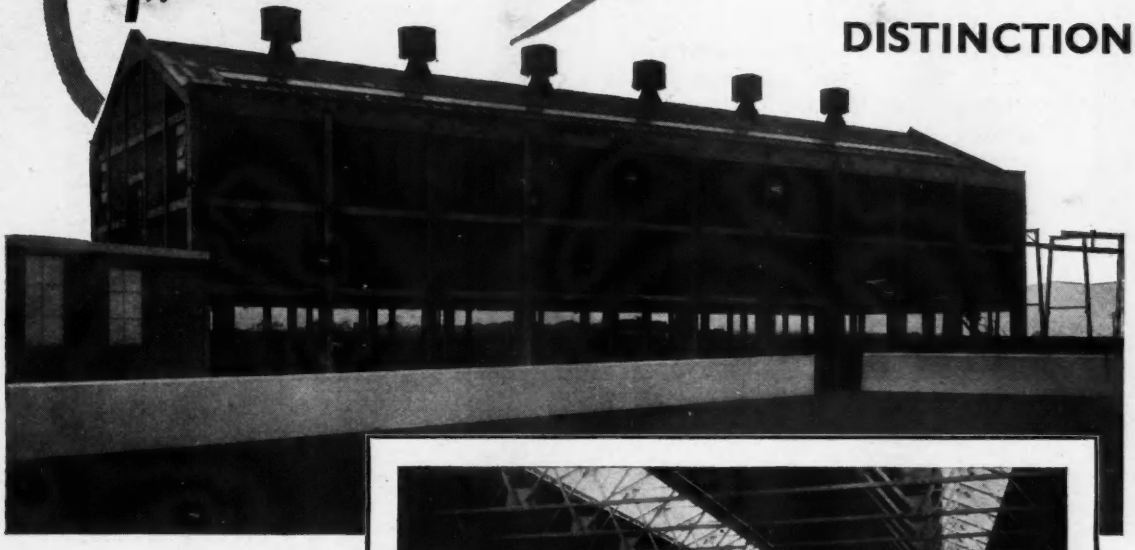

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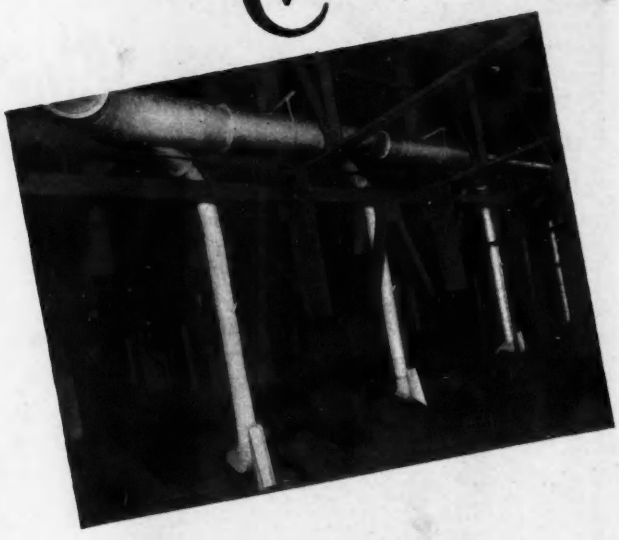
Our illustration shows the adjustable nozzles on the downcomers which are designed to direct the cooling air where required.



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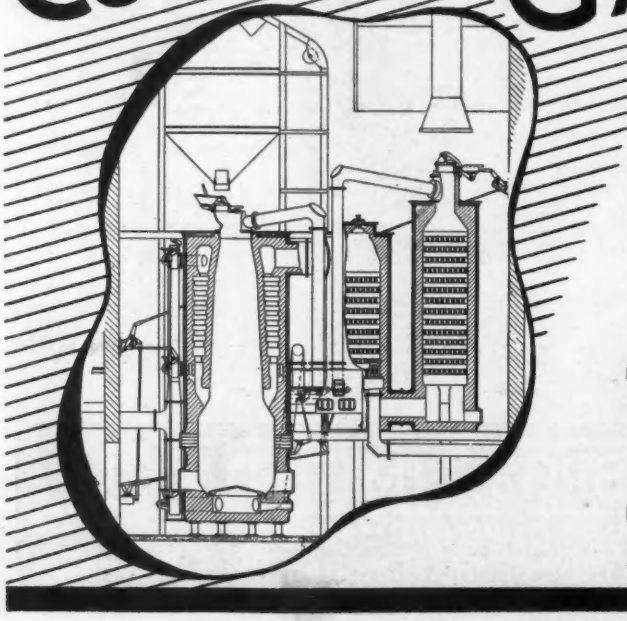

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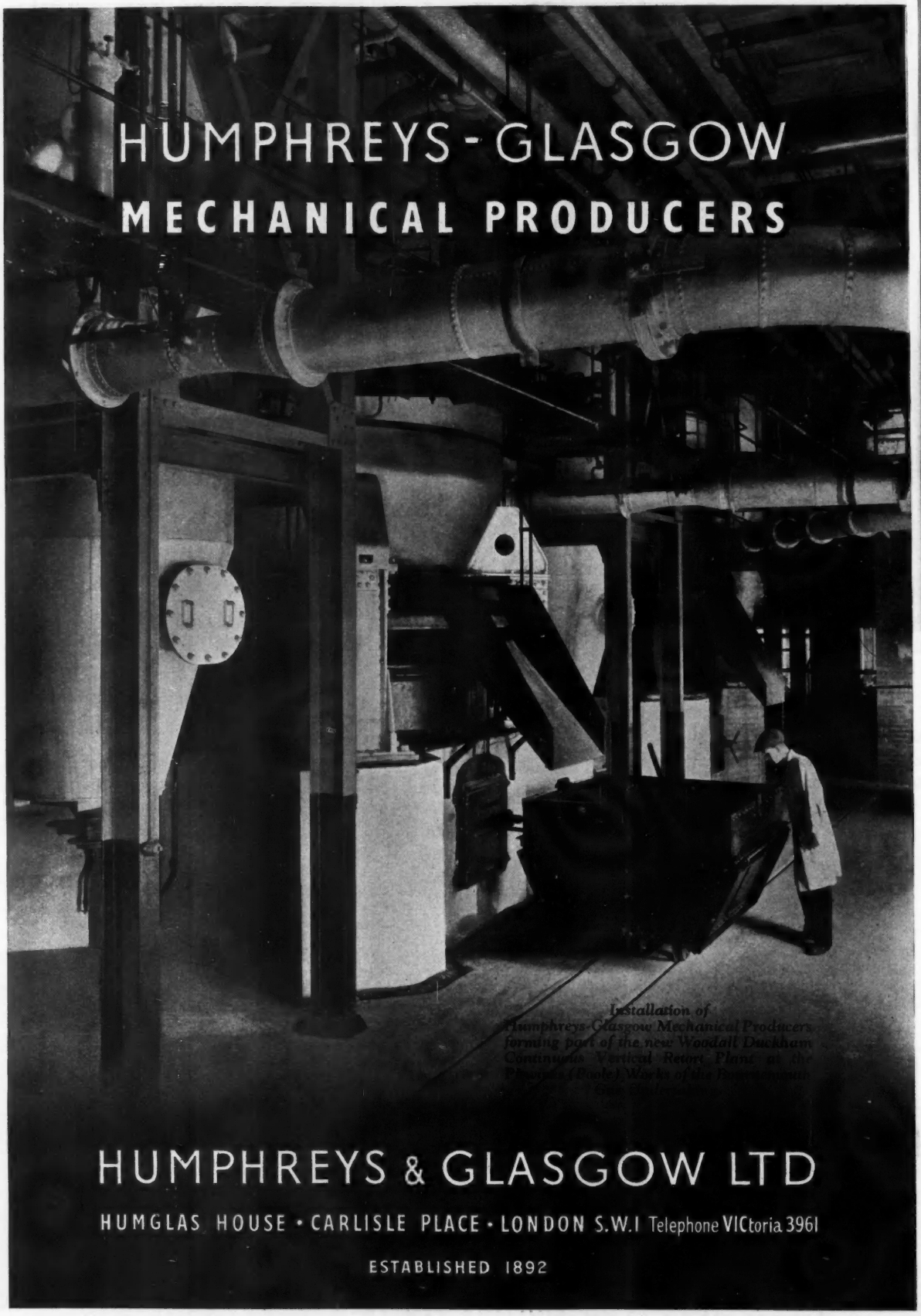
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MECHANICAL PRODUCERS
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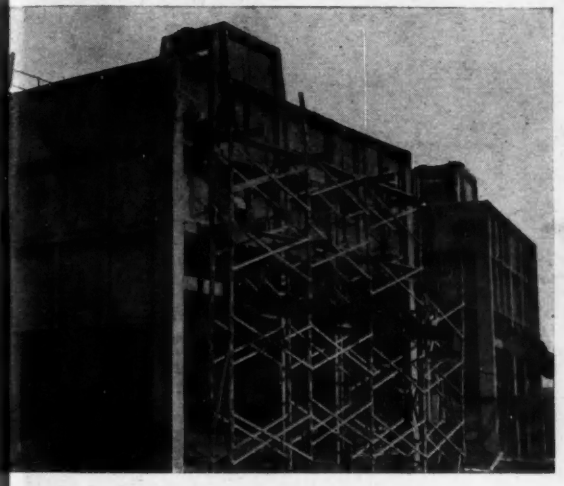
Gunite



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...unite—concrete applied by air pressure has numerous applications where its great density and extreme adhesion have exceptional value.

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Gas Journal

102nd YEAR OF PUBLICATION

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11, BOLT COURT, FLEET ST., LONDON, E.C 4.

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The dispute between the London Society of Compositors and the London Master Printers' Association continues, and no overtime is being worked. As a result, there has been no alternative but to reduce temporarily the number of pages of the Gas Journal. *Within the enforced smaller compass we are doing all possible to maintain the* Journal *news and technical service, though abbreviation is inevitable till the dispute is settled. In the difficult circumstances we ask subscribers' indulgence.*

Publishers' Notice : See page S3.

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GAS JOURNAL

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ELECTRICITY IN GASWORKS

THIRTY years ago several important gas undertakings were still valiantly trying to show that the whole of their moving machinery could be driven by gas or steam prime movers. Theoretically there was much to be said for this attitude. The thermal efficiency of the gas engine is high. Gas at cost price was very cheap. Steam could be raised from waste heat or low grade coke. But much of this advantage was lost in long trains of complicated and cumbersome transmission gearing and in long lines of steam pipes the effective insulation and draining of which were costly and often imperfect. With the increase of mechanisation electric driving became imperative. The next question was whether the electricity should be generated on the works from the same internally produced fuels or whether it should be wholly or partly purchased from the electricity supply industry. Mr. H. F. Buxton, Electrical Engineer to the South Eastern Area Gas Board, whose title and position is itself significant of the importance of the subject, made another excellent contribution to the discussion of this and allied questions in a paper presented to the London and Southern Junior Gas Association during the past session—further, that is, to the fine paper presented by Mr. G. M. Rimmer to the Institution of Gas Engineers at Birmingham in June, 1947. Practically every modern carbonising plant of any size is self-supporting by way of waste heat in power and steam for the process and for its ancillary coal and coke handling machinery. There is generally some surplus which, augmented by steam raised from low grade coke, would enable electric driving to be extended to most of the works needs. And there could be, and even generally would be, a further surplus at some hours of the day which could be 'exported' to the electricity grid in the manner described and discussed by Mr. Rimmer. Quite properly the choice between private generation and external supply is governed by considerations of cost per unit, but there is also at the present time and there will be for several years to come the over-riding consideration from the national point of view of the inadequacy of the generating capacity of the electricity supply industry to the national demands. It would seem to be self-evident that every possibility of efficient 'private' generation from wast heat and low grade internally produced fuel should be encouraged.

The difficulty of the want of synchronisation between availability and demand can be met to some extent by the system of import and export described by Mr. Rimmer. The same want of synchronisation between the surplus energy available at the gasworks and the demands of outside eectricity supply may make mutually advantageous arrangements difficult between the two industries. Parallel running between works and public supply is sometimes expressly forbidden. In these cases the gasworks will be thrust in upon itself. But we cannot conceive cases except of quite small works where private generation is not to be preferred even at a slightly higher cost per unit, and that on the two counts—first the desirability of self-sufficiency and reliability and, second, as we have already suggested, that this is not the time to throw further work on the inadequate public supply stations. Steam storage on the works is another possibility in the way of meeting the internal peak load which should be explored.

Perhaps the next question is that of the choice of current to be used, whether direct or alternating. Mechanical engineers have been accused of a certain pusillanimity in their preference for the direct current, which they think they do understand, as against the alternating current in which they have some want of confidence. They will read with some relief that the relative merits of the two systems will probably be debated even among electrical engineers as long as electricity is used. The advantages and disadvantages are well set out by Mr. Buxton. There was the additional objection to the A.C. motor that it took a very high starting current and that it was generally obdurate in its response to the mechanical engineer's demand for a motor which would come easily into operation and which could be varied, even if only a little, in speed. The modern A.C. motor is reputed to have got over some of these difficulties, and it was good to have confirmation of the generally accepted view that the 'fluid coupling solves many difficulties, if not all.' This at any rate is a solution which the mechanical engineer can understand.

There is another consideration which weighs very heavily on the side of alternating current. Manufacturers are getting more and more unwilling to make D.C. motors and equipment. They are certainly keeping none to

speak of in stock. And if the gas industry is going to insist on D.C. it will have to reckon on high costs and long delivery dates. At the same time it is interesting to note that so high an authority as Mr. Buxton is favourably inclined to the direct current motor. In the discussion the author's downright condemnation of V.I.R. cables in conduit was fully supported. But it is difficult to see why the conduit—steel tube enamelled inside and out—should be so unsatisfactory. At any rate quite a number of recent installations are still being wired in this way and some of long standing have proved satisfactory. Still we must accept the apparently unanimous opinion of the experts that the paper-insulated lead-covered wire-armoured cable is a safer proposition.

The discussion of this paper and the paper itself must be considered as a continuation of the discussion opened by Mr. Rimmer's 1947 paper. It was very keen and thorough. There is much detail. Mr. Rimmer made one point which we hope will not be overlooked. Commenting on the passage of Mr. Buxton's paper referring to the high pressure distribution of gas, he said that this growing practice represented an appalling waste of energy. One wonders just what is the relative and absolute magnitude of this waste. But at any rate Mr. Rimmer was able to point to attempts to recover some of it by using an expansion engine (coupled to an electric asynchronous generator) as a governor. Mr. L. J. Clark gave some interesting figures (with which Mr. Buxton agreed) for the gasworks demand for electricity which we have not seen before. In the works of the North Thames area he finds that it varies from 7 kWh/ton of coal carbonised in the smaller works to 15 in the larger works, and he estimates that in the future the demand for power will reach 18 to 22 kWh representing a charge of from 2s. to 3s. per ton of coal carbonised —a substantial proportion of gas production costs. This fact alone is sufficient to commend the whole subject to the very serious consideration of those to whom the design and operation of the gasworks of the future will be entrusted.

GERMANIUM RECOVERY

GERMANIUM has remained rare and its name unfamiliar until quite recently when, because of the increasing importance of 'semi-conductors' in the field of electronics, the properties of germanium crystals were examined and found to be of particular interest. Mr. R. C. Chirnside, F.R.I.C., of the Wembley research laboratories of the General Electric Company, has now announced in a contribution to the July issue of *The Times Review of Industry* that the production of this element in adequate quantities in this country is very probable. In so doing he acknowledged the co-operation of Mr. E. Crowther, Chairman of the Northern Gas Board, and that of Dr. H. Hollings, Controller of Research with the North Thames Gas Board, by whose help a comprehensive examination was made of dusts from gas plants under their control in sufficient quantities for the experimental work which has led to a process of extraction.

The General Electric Company became interested in the production of germanium towards the end of 1945 for use in several modern devices essential to telecommunication work. With knowledge of earlier work by Morgan and Davies, various samples of dusts were obtained from three small Northumbrian gasworks. The presence of both germanium and gallium in these samples was confirmed, but as the total quantity available was small, a more extensive search was made among the various plants of the former Newcastle-upon-Tyne and Gateshead Gas Company. A similar survey was subsequently made of dusts from the former Gas Light and Coke Company. From these searches a substantial annual tonnage of dusts, potentially rich sources of germanium, has been made available. First attempts at extraction of the element along the lines described by Morgan and Davies—that is, by distillation of the germanium as tetrachloride—proved unsatisfactory. It was decided that purely chemical methods of extraction offered less hope of success than those based on a more metallurgical approach. Extensive investigation in conjunction with Johnson, Matthey and Co., Ltd., was therefore carried out, and the research laboratories of that company have now developed a sound process for the extraction of crude germanium concentrates. From these Johnson, Matthey and Co., Ltd., was able to distil crude germanium tetrachloride and thus to establish a process giving an economic yield.

Sir Gilbert Morgan, it may be recalled, once said that if only 100 mill. tons of the coal produced annually in Great Britain contained germanium, then some 2,000 tons of germanium were either being dissipated into the atmosphere or discarded as useless dust every year. The germanium requirements of the electrical industry in this country have hitherto been met by imports, largely from the United States, in the form of metal or oxide. The contribution made by this piece of co-operative research, in which the gas industry has played and will continue to play no small part, is twofold. Valuable dollars will be saved, and there is good reason to hope that the output of germanium will be large enough to enable investigation of the potentialities of the metal for other uses.

STEEL PRODUCTION IN WALES

IT is expected that the plant at the new Abbey works of the Steel Company of Wales at Margam, Port Talbot, will be in full operation in little more than a year. It will be the world's largest and most modern steel producing unit, employing 7,500 workers and turning out 1.5 mill. tons of ingot steel per annum. Ninety new coke ovens are being built, and the surplus gas will be purchased by the Wales Gas Board. One-third of the output of steel ingots will go to allied plants and other consumers, and two-thirds will be transformed at Margam in equal proportions into sheet steel, tinplate and steel plates. Large quantities of sheet steel will be available for the motor car industry and for the making of railway coaches, refrigerators, office and domestic furniture, and kitchen equipment. Canning factories and other industries will be supplied with tinplate, and the steel plate will be available for oil tanks, pipelines and for shipbuilding.

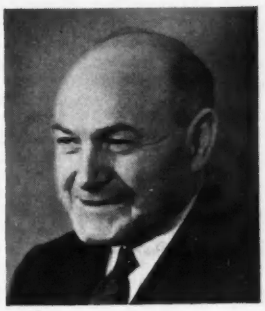
COAL EXPORTS TO HOLLAND

LAST month the Dutch Government decided to reduce import licences for British coal, the line taken being that imports of coal on which subsidy over a certain level has to be paid must cease. Up till now Holland has been one of the biggest importers of British coal. Last year her imports totalled 903,800 tons; and, as was shown in the 1949 report of the National Coal Board, the board's profit of £9½ mill. was largely attributed to export sales. Some time ago the Dutch started to switch over from British to German sources, and it is suggested that the point has been reached when imports from Britain could be stopped altogether. The N.C.B. claim

that exports lost can be absorbed in deliveries to other export areas. The *Financial Times* in an analysis of the situation states that on a short-term view the loss of a portion of the Dutch market need not perhaps disturb the N.C.B. unduly. But it goes on to say that the Dutch incident cannot be viewed in isolation. 'Once coal of the right qualities becomes more plentiful, other importers will no doubt decide to buy their coal more cheaply elsewhere than in Britain. This is therefore a timely reminder of the problems that will have to be faced by the British coal industry when the sellers' market for coal abroad finally disappears.'

Personal

Mr. **J. T. Rees'** appointment to Sales and Service Manager to the West Midlands Gas Board has already been announced. Mr. Rees has spent the whole of his career with the Birmingham undertaking, the majority of that time with the Fittings Section. He has been successively Salesman, District Inspector, Branch Superintendent, Assistant Fittings Superintendent, Fittings Superintendent, and Deputy Controller of Gas Sales. In the educational field he has been a teacher in Gas Supply Technology at the Central Technical College, Birmingham, for 15 years, examiner in Gas Fitting and a member of the Moderating Committee for Gas Fitting and Gas Technology, City and Guilds, London, and member of the Sales Training Committee and the Meters Committee of the Institution of Gas Engineers. He was Secretary and Chairman of the Gas Salesmen's Circle (Midlands District).



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Mr. **L. H. Walker** has been appointed Marketing Director of the Northern (Northumberland and Cumberland) Coal Board, in succession to Mr. L. Graham, who was recently appointed Deputy Chairman of that Board. Mr. Walker was with the Mickley Coal Company from 1915 to 1938. In 1938, he became Secretary of Backworth Collieries, Ltd., in 1939 General Manager, and from 1941 to 1946 was Managing Director of the company. He was a member of the Northumberland Coal Owners' Association for many years, and of the Northumberland Executive Board and the Northumberland Sales Committee. Since early 1947 he has been Area Marketing Manager of the South Northumberland Area of the National Coal Board.

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J. W. Kaye, Group Engineer of the South Western Division North Thames Gas Board, stands between his newly appointed Joint Divisional Managers. C. Pearson (left) and P. G. Wright.

Mr. **M. W. Illingworth** has retired from the Managership of the Kirton (Boston) gasworks, of which he has been in charge for 35 years. He has spent all his life in the industry. He received his training at Formby, Liverpool, and before going to Kirton, was Manager at Holsworthy.

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Mr. Dean Chandler would like through our columns to thank his very many friends in the gas industry for their solicitude during an illness from which, we are very glad to say, he is now rapidly recovering. He cannot at the moment reply individually to those who have written to him, but he asks us to say how encouraging it has been for him to have received their letters.

Obituary

Mr. **Charles C. Walmsley,** Divisional General Manager of the Sunderland Division of the Northern Gas Board, died at his home at Whitburn on July 31 after an illness of five months, aged 51. Mr. Walmsley, who was well-known and highly respected throughout the gas industry, received his early education and training at Accrington and, following a period of service in the Town Clerk's office, he was for 11 years with the Accrington District Gas and Water Board as Commercial Assistant. He was for some time Accountant to the Preston Gas Company, and during the first world war he held commissioned rank in the Army and served in France. From 1933 to 1937 he was Accountant to the Worcester New Gas Light Company, and in the latter year he was appointed General Manager and Secretary of the Sunderland Gas Company, following the death of Mr. J. H. Curry. In 1945 he was appointed Managing Director and Secretary of the Company and held the post until vesting date. He was a Fellow of the Chartered Institute of Secretaries, Fellow of the Institute of Company Accountants, and Fellow of the Statistical Society. Since nationalisation he has been Chairman of the Divisional General Managers' Committee of the Northern Gas Board. Mr. Walmsley was President of the North of England Gas Managers' Association in 1946-47. He was a member of the Northern District Education Committee of the Institution of Gas Engineers, a trustee of the Arthur Clement Hovey Education Trust and a member of various regional committees. Prior to nationalisation he was Chairman of the Special Purposes Section of the North of England Gas Managers' Association and northern representative on the British Gas Council and the Federation of Gas Employers. His hobbies were angling and golf.

Diary

Sept. 5.—East Midlands Gas Consultative Council, Guildhall, Nottingham, 2.30 p.m.

Sept. 5-7.—Irish Gas Association: Annual Meeting, Limerick.

Sept. 8.—Northern Junior Gas Association: 'Distribution,' G. Haddon (Stockton), at Stockton.

Sept. 11.—Women's Gas Council: Executive Committee, at Gas Industry House, S.W.1, 1 p.m.

Sept. 18-22.—Association of Public Lighting Engineers: Annual Meeting and Conference, Bournemouth.

Sept. 20.—Southern Gas Consultative Council: Reading, 2.30 p.m.

Sept. 21.—North British Association of Gas Managers: Annual General Meeting, Oban. 'Group Working,' N. C. Sturrock (York-Harrogate Group, North Eastern Gas Board; 'The Use of Town Gas in a Dental Workshop, with special reference to heat treatment of Acrylic Resin,' W. Kirk (Motherwell and Wishaw); 'Sales and Development,' Part 1, R. Cowie (Hawick); Part 2, T. Gordon Bennett (Edinburgh and South East Division). (Golf and bowling competitions on Sept. 20; steamer excursion on Sept. 22).

Sept. 22.—Northern Junior Gas Association: Visit to West's Gas Improvement Co., Ltd.

Sept. 28.—North Thames Gas Consultative Council: St. Ermin's Hotel, Westminster, S.W.1, 2.30 p.m.

Oct. 11.—Society of British Gas Industries Golfing Circle: Autumn and Annual General Meetings, Richmond Golf Club, Sudbrook Park.

Pension Rights Regulations

IN exercise of powers conferred on him by Sections 58 and 62 of the Gas Act, 1948, the Minister of Fuel and Power has made the Gas (Pension Rights) Regulations, 1950 (Statutory Instrument, 1950, No. 1206) which were laid before Parliament on July 26 and will come into operation on September 1.

The regulations relate to the pension rights, as defined in the Gas Act, of certain persons employed by former gas undertakings who, either before vesting date or on that date, passed into the employment of gas boards or the Gas Council. For the purpose of the regulations the former British Gas Council, Federation of Gas Employers, National Federation of Gas Coke Associations, every constituent association of the Federation, and the Association of Gas Corporations, whose assets have been vested in the Gas Council, are deemed to have been gas undertakings, and in addition certain pensioners of gas undertakings are also provided for.

Pension schemes confined to employees of these undertakings, including persons employed in connection with their undertakings, are to be continued by the appropriate gas board or the Gas Council, with modifications permitting an employee to transfer his services to another board without leaving the scheme or to transfer to a pension scheme established under the Gas (Pension Scheme) Regulations, 1949. With certain limited exceptions, however, no new entrants may be accepted.

Schemes not confined to such employees, but which cover 25 or more persons taken over by any one board or by the Gas Council are to be split unless they are schemes financed by insurance. Pension schemes involving local government funds are also to be split. The board concerned or the Gas Council is to afford rights for all persons taken over, including existing pensioners whose service related to gas, corresponding with those which those persons would have had if the pension scheme or the local government enactment had remained applicable, and are to receive a proportionate part of the assets held for the fund.

Insurance schemes and schemes with persons taken over by a gas board or the Gas Council who number less than 25 are modified so that members can transfer from one gas board to another without being compelled to leave the scheme. In all other cases of persons with pension rights the operation of the Gas Act itself ensures their protection and no provision is called for in the new regulations.

Determination of the amount of the assets to be transferred will be by actuarial valuation at the next periodical valuation of the scheme or fund. Expenses actually and necessarily incurred by the managers of the scheme or the local authority will be refunded.

Provision is also made authorising membership of an area board or the Gas Council to be treated for the purpose of certain schemes as service in their employment, for the disclaimer of rights created otherwise than in the ordinary course, and for the settlement of disputes.

The regulations are made effective, in the case of persons who assumed office before vesting date, from the date of the passing of the Gas Act, 1948, and in other cases from vesting date. Copies of the regulations are obtainable from the Stationery Office, price 4d.

Gas for Council Tenants

Members of Brigg Urban District Council at their last meeting criticised an application by the East Midlands Gas Board for permission to make gas available to tenants of Council houses at New Holland and Goxhill.

The Housing Committee asked the Council to reject the application and Councillor F. T. Hepworth urged that the Government should make electricity 100% available in the two villages before spending money on extending gas supplies.

Councillor A. S. Phillipson, Vice-Chairman, said if the recommendation was adopted it would be a reversal of the Council's policy, which was that where electricity or gas was available tenants were at liberty to take the supply they wished.

Councillor J. R. Hesland said if gas was to be made available without cost to the Council the tenants should have the right of choice.

The Housing Committee was instructed to consider the matter further.

Northern Juniors

On July 21 the Northern Junior Gas Association paid a visit of inspection to the works of the Expanded Metal Company, Ltd., Greatham Street, West Hartlepool. Members found this to be a very interesting visit and were afterwards entertained at tea in the works canteen by the directors of the company.

A vote of thanks to the company was proposed by Mr. F. J. Webster, of West Hartlepool, for their hospitality, and the Chief Engineer replied.

On this visit, members saw the processes of the manufacture of expanded metal from the plain steel sheets to the finished product packed and ready for dispatch. The variety of uses to which expanded metal is applied is very wide, and in addition to its normal uses for the reinforcement of concrete, it is employed as form work for concrete constructions, for the construction of partitions and ceilings instead of wooden lathing, is widely used for electrical resistances, and has a very large number of applications which are not generally associated with expanded metal.

A Visit to Sidney Flavel & Co., Ltd.

A party of some 30 members of the Stratford-upon-Avon branch of the Women's Gas Council visited the works of Sidney Flavel & Co., Ltd., Leamington Spa, on July 18. They were accompanied by their Chairman (Mrs. Councillor White, ex-Mayoress of Stratford-upon-Avon), Mrs. Tomlinson Jones (wife of the Engineer and Manager of the Stratford-upon-Avon District of the West Midlands Gas Board), and Mr. W. I. Steed (Sales and Service Manager of the Warwickshire Division of the West Midlands Gas Board).

An extensive tour of the plant, laboratory, and offices, was undertaken. Included in the many appliances in the course of production, was the new 'Popular' cooker, and the party displayed keen interest in the various stages of production and assembly.

They were welcomed at tea by Mr. Duncan Wright, Assistant Managing Director, who referred to the growing need for organisations such as the Women's Gas Council, to see at first hand production of home appliances in daily use.

Mr. F. M. Rogers, Sales Director to the company, also addressed the party, and in the course of his remarks made reference to the technical build-up of the new 'Popular' cooker, and pointed out the technical features that had been incorporated by recourse to advice resulting from surveys and questionnaires carried out in conjunction with panels of housewives.

Kent Coalfield Progress

Speaking at the annual supper party of the South Eastern Division of the National Coal Board on July 29, Lord Hyndley, Chairman of the National Coal Board, said that in the first half of 1950 the Kent coalfield had improved on the first half of 1949 by over 50,000 tons but they had still some way to go to reach their 1939 level of 1.8 mill. tons compared with last year's 1.6 mill. tons. They had changed a loss of almost £250,000 into a profit of over £4,000; in other words, instead of losing 3s. a ton they made a profit not far short of 1d.

Up to the end of 1949 over £750,000 had been spent on re-equipment and future development. Referring to the national plan to discover the most efficient shape for the industry as a whole as well as for each coalfield, Lord Hyndley said a vast amount of work had been done on the plan during the past year and the basic work had been completed. The plant was intended to be flexible and would be adjusted from time to time to take account of improvements in technique and in efficiency generally within the industry.

The place of Kent in the future pattern of the industry would be an important one. This coalfield had considerable attractions—attractions which would grow as they brought down costs still further. To this extent the future was in their hands, and he asked them to do their utmost to make it a bright one. So far they had done very well. It was no mean feat for the smallest division to have shown the biggest improvement. They had made the White Horse of Kent turn out to be the 'dark horse' of the industry.

North Thames Boundary Shortened

South Eastern Board to Supply New L.C.C. Estate

THE North Thames Gas Consultative Council at a meeting on July 27, presided over by Councillor E. Bayliss, J.P., approved an alteration in a small section of the boundary of the North Thames and South Eastern Gas Boards' areas. An invitation to the Chief Accountant of the North Thames Gas Board to explain the financial structure of the board was deferred pending the presentation of the accounts for the first year's working. A number of complaints were discussed and the council received with satisfaction a report by the Chairman on the recent meeting of chairmen of consultative councils at which the North Thames area was said to have the best public relations and publicity in the country.

The question of change of boundary arose out of a letter from the Ministry of Fuel and Power which stated that the two boards, with the support of the Gas Council, had applied for the alteration. The London County Council proposed to develop a housing estate of about 1,300 dwellings near Chertsey. At present the boundary of the two boards crossed the estate. A small part of the estate could be supplied by existing low pressure mains of the North Thames Gas Board, but to supply the remainder of that part of the estate which fell in its area the board would be obliged to lay a new trunk main costing about £14,000. On the other hand, that part of the estate, together with that falling within its own area, could be supplied from the existing mains of the South Eastern Gas Board.

The **Chairman** stated that the strip of land in question was at present undeveloped, and no existing consumer would be affected by the transfer.

The council therefore agreed to raise no objection to the draft order.

Financial Structure

The **Chairman** announced that the first year's accounts of the North Thames Gas Board were almost ready, but the board was awaiting a decision of the Minister of Fuel and Power regarding the standard form in which the accounts of all the 12 area boards were to be presented. A suggestion had been made at an earlier meeting that the Chief Accountant should be invited to give the council an explanation of the financial structure, particularly in relation to the establishment of research and other funds. The Chairman of the board, however, had suggested that it would be more advantageous to wait until the first year's accounts had been completed.

The council agreed to defer the invitation until a later date.

Minutes of meetings of the Metropolitan, Essex, and Berks and Bucks district committees were formally approved. The Chairman mentioned that members of all the district committees had been given facilities to visit one or more of the works in the area, and on their behalf he was satisfied that he could tell the board that the facilities had been appreciated and that the visits had been well worth while.

Among complaints referred to in the district committee minutes was one from a Windsor consumer who had demanded that an enamelled cooker which had been in use since 1929 should be reconditioned or exchanged for a modern cooker at the old rental of 3s. 6d. per quarter, on the ground that either it had not been maintained or had been damaged in the 1947 floods. The board had come to the conclusion that the demand was not reasonable, and the district committee was unable to support the complaint of unfair treatment. The board had offered to recondition the cooker or supply a new one at current rates, and the consultative council considered this satisfactory.

A Meter Complaint

A Finchley consumer had disputed his account for one quarter in which the consumption jumped from a normal average of 11 therms to 43 therms, though he had agreed that the meter had since registered a normal consumption. He had refused the district committee's advice to have the meter tested, and as the board had no reason to suspect that the meter was registering incorrectly the committee could not do anything in the matter.

A Bracknell consumer had complained that a cooker of obsolete pattern, her own property, was defective, but she had now been provided with a modern cooker on hire purchase and was quite satisfied.

The Middlesex and Surrey committee passed on to the council a complaint of lack of privacy at the Kilburn showrooms in discussing delicate financial matters. Councillor Mrs. **A. Topping**, Chairman of the committee, commented that at a bank a customer could either go to the manager's office or to a partitioned portion of the counter, but in the showroom personal affairs had to be discussed in the hearing of a queue of neighbours. She suggested cubicles as a solution.

The council agreed to suggest to the board that when consumers specially desired privacy they should be informed that representatives were prepared to call on them in their own homes.

A circular had been received from the National Women's Citizens' Association expressing regret at the small proportion of women appointed to consultative councils generally. The Secretary had replied explaining the method of appointment of the councils and giving the names of the members of the North Thames council, with which the Association appeared to have been satisfied.

The **Chairman** reported on the recent meeting of chairmen of gas consultative councils presided over by the Minister of Fuel and Power—a meeting so useful, he said, that it had been arranged to hold similar meetings in future at quarterly intervals. Among matters discussed was the question of public relations and publicity. Some areas were failing to get the publicity desired, but it was felt that the public relations and publicity in the North Thames area was better than in any other part of the country, partly due to the fact that the area was smaller and more compact than the others.

Public May Attend

It had been ruled that any member of the public who wished to attend the meetings of the consultative council was entitled to do so, but that the meetings of the district committees should be held in private. Disappointed on hearing that the Post Office was unwilling to exhibit consultative council notices, the Minister had promised to see the Postmaster General. Practically all the consultative councils had passed resolutions urging the abolition of purchase tax on gas appliances, but the Minister had told them that nothing could be done in present circumstances.

Certain organisations had asked for copies of minutes and reports, but the general feeling was that instead of issuing documents the Secretary should answer questions more informally.

Secretarial arrangements differed in the various areas. In some cases—as in North Thames and South Eastern—an officer of the board had been seconded for service as Secretary; in others the Chairman had a personal assistant who discharged the secretarial duties. In the former instances divided loyalties might arise if there were any differences between the board and the council, but the Chairman emphasised that so far as Mr. Elliott was concerned they were completely satisfied.

A question had been raised as to the eligibility of gas board employees for membership of consultative councils and district committees, and the Minister had barred them. It had been found, however, that two Tottenham employees were members of a district committee in the Eastern area. The Minister had decided that this was wrong and had promised to take steps to remove their names from the committee. A reminder had also been issued that if members of councils and committees were absent from meetings for more than six months without leave or good cause they were liable to disqualification.

St. Asaph Street Lighting.—St. Asaph Parish Council is to approach the Wales Gas Board for a renewal of the contract for street lighting, as otherwise the streets will be unlighted during the winter. The Council had decided to borrow £3,000 to substitute electricity for gas for lighting the streets, but has been unable to get the necessary sanction. Even if it arrived immediately it is not now possible for the electric installation to be completed in time for the winter months.

District Heating Schemes

Mr. John Morrison, M.P. for Salisbury, asked the Minister of Health in the House of Commons on July 6 whether, in view of the fact that the Bemerton Heath district heating scheme which was originally sponsored by his Department as an experiment had resulted in charges to the tenants greatly in excess of those anticipated, he would alleviate the burden of the rising cost and hardship and reconsider the question and make a special grant to those tenants concerned.

Mr. Bevan replied that there were no special grants provided for district heating schemes. He was aware that the costs of the Salisbury scheme had, due to a number of factors, exceeded the original estimates. On the other hand, improvements had been made in the plant which, he hoped, would produce more efficient and economical service. In reply to a further question he said that he did not think that the increase was due to the increased cost of fuel.

Mr. G. Cooper (Lab., Middlesbrough West) on July 25 asked the Minister of Town and Country Planning on what grounds it had been decided that district heating schemes should not be proceeded with in the new towns.

Mr. Hugh Dalton replied that it was because, in the one new town where it was contemplated, he was satisfied that it would not pay.

Mr. Cooper asked if consideration had been given by the New Towns Development Corporation to the use of heat from rubbish destructor plants, as well as heat from electric generating stations.

Mr. Dalton said that was a wider question. He went into the case very carefully and was satisfied that the density of building was not such as to give any probability of the scheme covering its cost, and for that reason he turned it down.

Mr. C. W. Gibson (Lab., Lambeth) asked whether the Minister would, in general, be sympathetic to that kind of proposal in view of its economic importance and of the fact that in other countries, and particularly in Paris, they had made a success of it.

Mr. Dalton said he would be sympathetic if he thought it would be an economic proposition. In some parts it would be, in others it would not. It might well be in London, where there was a density of population and tall blocks of flats, but that was not so in a relatively dispersed development.

Gas Stock Values

The Minister of Fuel and Power has declared by Order that the values of three more securities have been determined under Part II of the Gas Act, 1948, the conversion date being July 31, on which date the securities were extinguished and the holders thereof became instead holders of British Gas 3% Guaranteed Stock, 1990-95 (issued at par and redeemable at par). The securities are:

Company	Compensation Value
Crook Gas Co., Ltd., Ord. Shares (£1 unit)	2/6
Helston and District Gas Co., Ltd., 6% Red. Pref. Shares (£1 unit) ...	10/-
Kidsgrove Gaslight Co. 4% Red. Deb. Stock (£100 unit)	£101/15/-

Where payments of interest made on or before May 1, 1950, by the Gas Council under direction of the Minister are not sufficient in total to discharge in full the interest due for the two periods of six months ended October 31, 1949, and April 30, 1950, respectively, the Gas Council will on or about September 1, make good the deficiency by paying to holders of securities as at September 26, 1949, any balance due for the first period of six months, and to holders as at March 27, 1950, any balance due for the second period of six months. The third six months' interest will be paid on the British Gas Stock on November 1.

North Thames Output

Statistical information on the number and types of consumers and the proportion of gas sold to different classes of consumers in each of the committee districts was recently sought from the North Thames Gas Board by the consultative council. The first return furnished by the board, covering the March quarter, 1950, was submitted to the consultative council at its meeting on July 27. The figures were as follows:

Berkshire and Buckinghamshire group: Domestic, 3,518,585 therms (69.3%); non-domestic, 1,492,420 therms (29.3%); public street lighting, 78,814 therms (1.5%); total, 5,089,819 therms.

Middlesex and Surrey group: Domestic, 20,050,120 therms (66.3%); non-domestic, 9,504,239 therms (31.5%); public street lighting, 667,390 therms (2.2%); total, 30,221,749 therms.

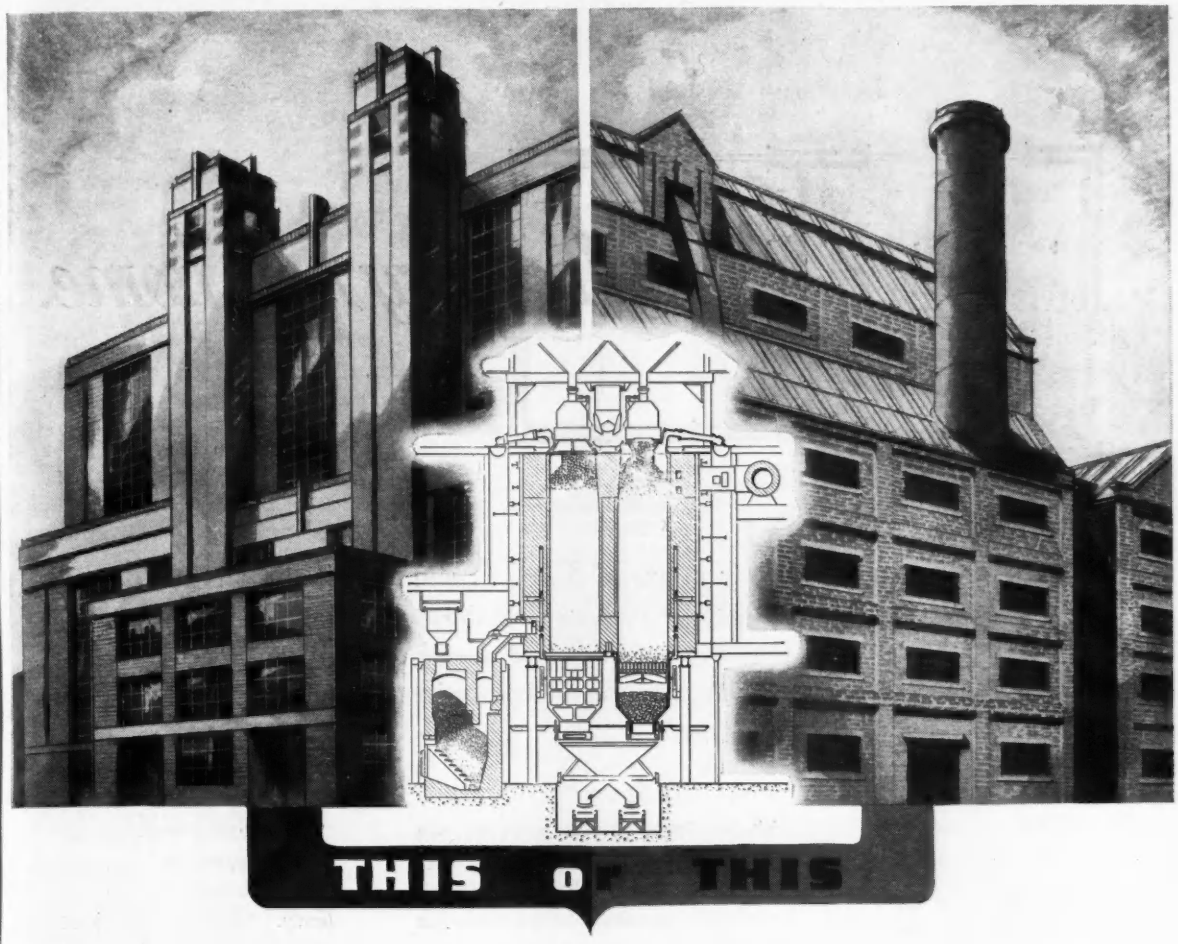
Metropolitan group: Domestic, 24,441,950 therms (49.6%); non-domestic, 23,914,158 therms (48.6%); public street lighting, 876,169 therms (1.8%); total, 49,232,277 therms.

Essex group: Domestic, 15,337,950 therms (70.7%); non-domestic, 6,097,412 therms (28.1%); public street lighting, 261,028 therms (1.2%); total, 21,696,390 therms.

Total: Domestic, 63,348,605 therms (59.6%); non-domestic, 41,008,229 therms (38.6%); public street lighting, 1,883,401 therms (1.8%); total, 106,240,235 therms.

Six new leaflets have been published by **Griffin & Tatlock, Ltd.,** Kemble Street, Kingsway, London, W.C.2. These describe the G. & T. universal laboratory stirrer with built-in speed control flexible drive and vat or drum clamp, improved microid polishing aluminas, Pyrex brand ⅛-in. bore pipe lines, Stanton balances, a microid flask shaker, and the G. & T. cylindrical oven. The company announces that the delivery position on general laboratory apparatus has been markedly improved during the past year.

Members of the East Surrey Gas Salesmen's Discussion Group of the South Eastern Gas Board visited the works of Bratt Colbran, Ltd., at Wembley. The parties were welcomed by Mr. R. H. Lewis, General Sales Manager, and members of the staff who guided the visitors, in small parties, on a comprehensive tour of the works, including the laboratory, workshops, and test benches. They saw stonemasons and carpenters at work on surrounds; welders and riveters operating the most up-to-date equipment, and were impressed by the efficiency and precision with which the problems of space heating were tackled. The Chairman of the Group, Mr. E. Wulstan Atkins, expressed thanks for a pleasant and instructive afternoon, and Mr. Lewis responded. The visit terminated with the showing of a short film depicting the many and varied uses of space heaters.



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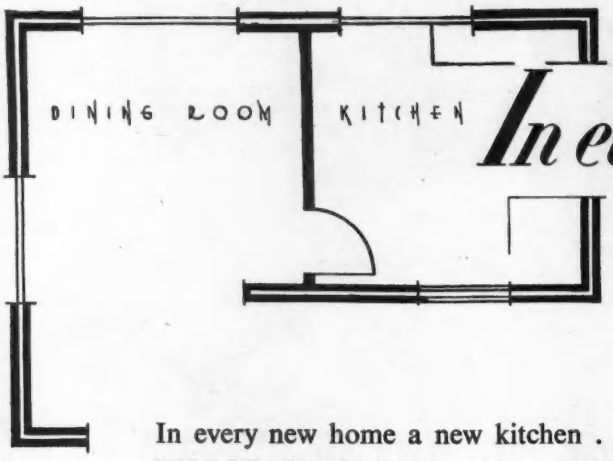

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In every new home a new kitchen . . . and a place for a NEW WORLD Gas Cooker — as in most of the old homes, too! More than two million have been supplied during the past thirty years and now the third generation of housewives is saying: "It's a NEW WORLD for me."

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The Air-Float Oven heats quickly and, with the Spring-Sealed Door, reduces heat leakage to the barest minimum. It is a one-piece unit of vitreous enamelled sheet metal sealed to a cast aluminium alloy front which, in turn, is bolted to the front frame of the Cooker at four points through insulating washers.

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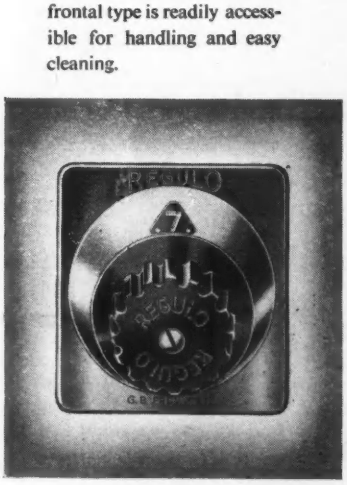
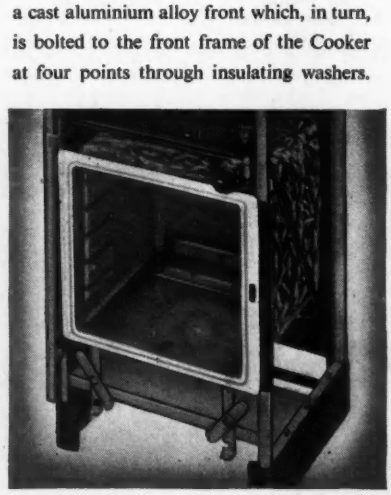
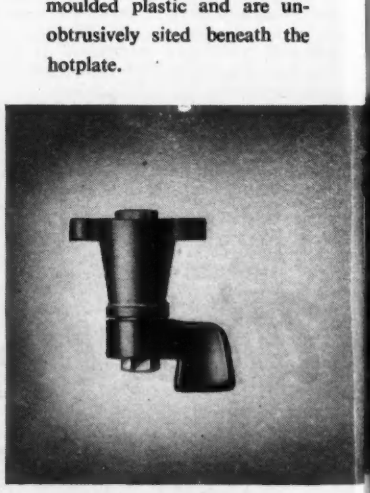
The self-seating Vertico taps are leak-proof, trouble free, and cannot be turned on inadvertently. Their handles are of moulded plastic and are unobtrusively sited beneath the hotplate.







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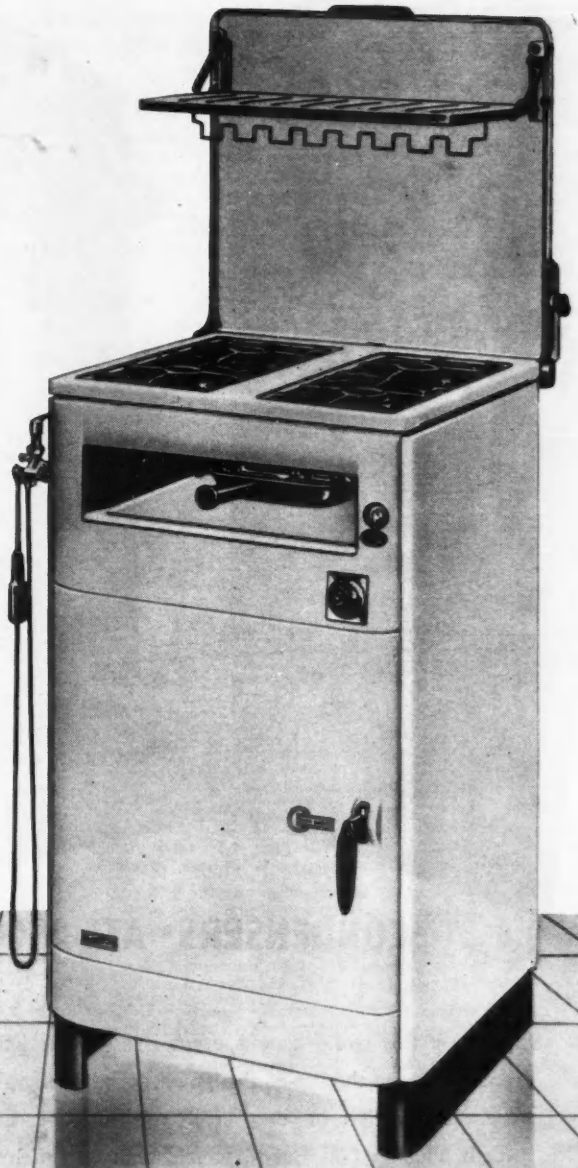

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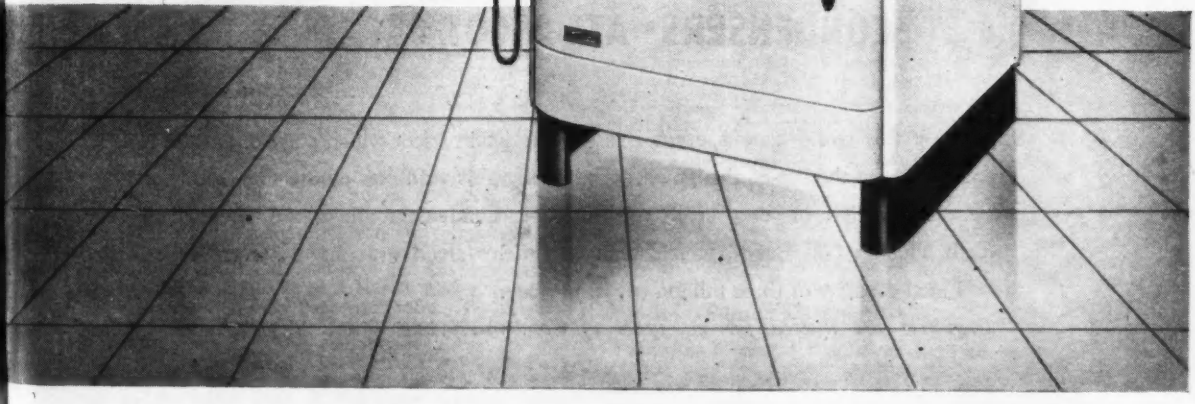
GAS COOKERS

Here is the NEW WORLD No. 1640 in all-cream finish with folding platerack and covertop, four hotplate burners, REGULO Oven Heat Control and the NEW WORLD No. 50A Gas Match.



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515 A

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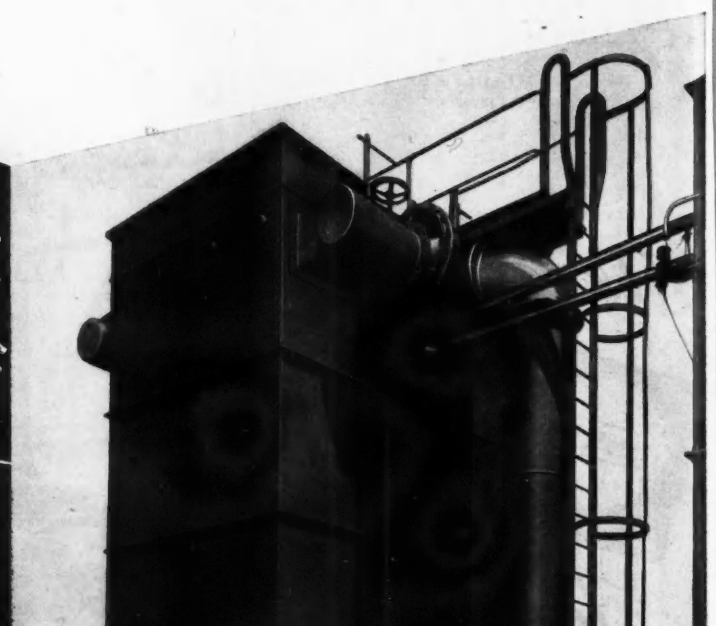

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Ash Fusion Gas Producer

The following is a specially contributed abstract of an article by W. Gumz, published in *Das Gas und Wasserfach*, May 15, 1950.

THE ash fusion gas producer, which operates on the same principle as a blast furnace, was conceived at the beginning of the 19th century, but none of the proposals of the early pioneers found practical application until Ebelmen erected a producer in 1841. The drawbacks of this type of producer are the devastating effect of the high generator temperatures and the loss of heat through the high exit temperatures of the gas. Hence, the number of plants in operation have remained small, notwithstanding certain improvements made by the addition of basic slag to the fuel and the admixture of steam to the blast.

A new phase of development started in 1898, when Linde suggested the use of oxygen or oxygen-enriched air in connection with the gasification of solid fuels. The high cost of oxygen production, however, has prevented the application of the suggestion, until the perfection of Linde's process by Fränkle, made oxygen available for industrial purposes at an economic price. A number of producers using oxygen in the blast have been developed; among them is notably one at the Thyssen Gas and Water Works, built according to the patents of Galocsy and Koller. It is a two-stage producer. The blast consists of a mixture of steam, oxygen, and recirculated gas. This mixture is passed first through a combustion chamber, before it is admitted—with oxygen still in excess—to the producer itself. The object of this method is to provide means of controlling (and limiting) the reaction temperature in the producer.

The two stages, however, are not necessary, as other ash fusion producers as well as those fitted with rotary grates have operated without difficulty with oxygen-enriched blast. The I. G. Farben have run a plant at the Leuna works, near Merseburg, since 1931. It consists of modified Würth producers, possessing water jacketed shafts instead of those with brick linings. A serious accident, caused through water entering the fuel bed, made it necessary to introduce special safety devices; otherwise the installation has worked well. In 1935 the plant was enlarged to produce 750,000 cu.ft. of nitrogen-free gas from six producers operating in conjunction with a Linde-Fränkle oxygen plant. The fuel has been ungraded clinker with a carbon content of 50% derived from an ordinary water gas plant.

The ash fusion producer is obviously not an economic proposition as a balancing unit in conjunction with blast furnaces, but it does not deserve to be condemned generally. On the contrary, it possesses distinct future possibilities, not only when operated with oxygen and steam, but as an ordinary air-steam blast gas producer, or as generator for the production of water gas and synthesis gas.

A Critical Examination

Contrary to the common belief, high grade fuels are not essential for the operation of ash fusion producers; in fact, quite a number of installations gasify inferior fuels such as shale, coke of high ash content, clinker, etc., producing valuable by-products at the same time such as iron and its alloys, and slag. The wider choice of fuels—and in particular the absence of a lower limit as regards ash fusion point—are distinct advantages of the ash fusion producer. On the other hand its thermal efficiency is low, when operated with dry air blast, and does not compare favourably with that of other types working with air blast saturated with water vapour at 50° to 60°C. The defect is readily overcome by the addition of steam to the blast, even if the latter contains added oxygen. The high temperature of the exit gases (800° to 900°C.) causes considerable wear and tear and demands an appreciable amount of cooling water for the gas. A further disadvantage is the carry-over of dust and breeze from the producer. Hence clean fuel is essential, but the screenings can be utilised with advantage elsewhere.

The most attractive feature of the ash fusion producer is obviously its high throughput of fuel and output of gas with its corresponding low cost of installation and of labour. Producers of a capacity of 300 tons of fuel per 24 hr. have been built. The throughput rate ranges from 400 to 600 kg/sq. m./hr. (82 to 120 lb. per sq. ft. per hr.) of shaft diameter, which is thus two to three times the figure obtainable on producers fitted with mechanical grates. When oxygen is used, throughputs of up to 1,000 kg/sq. m./hr. (202 lb./sq. ft./hr.) have been reached. These rates do not represent the maxima which are attainable, and may be trebled when the producer is worked at a pressure of 20 atm. (282 lb./sq. in.). It is obvious that the ash fusion producer is essentially suitable for large installations. For example, an electric power station of 100,000 kW capacity would require only two producers of 4.3 m. (14 ft.) diameter if operated at a pressure of 5 atm. (70 lb./sq. in.), in which case each produeer could gasify 500 tons of non-caking fuel.

Composition and quality of the gas obtained from ash fusion producers vary as on other producer plants, depending on the fuel and the mode of operation. The calorific value may vary from 1,099 cal. per cu.m. (115 B.Th.U./cu.ft.), when coke and dry air blast are used, to 2,855 cal. per cu.m. (303 B.Th.U. per cu.ft.), when the air blast is replaced by oxygen. In the former case a theoretical cold gas efficiency of 70% can be obtained, but this figure can be raised to 80 to 85% when steam is added to the blast.

Development to Date

Suggestions for the improvement of design and operation of ash fusion gas producers have been concerned with (a) operational technique, (b) the widening of the fuel range, (c) thermal efficiency, and (d) the use of oxygen in the blast.

The choice of fluxes, which has received serious attention since the earliest days of this type of producer, is somewhat limited. Certain fluxes such as iron or iron ore, or acid slag, are obviously confined to the iron and steel industry, but the addition of steam to the blast, originally suggested by Lürmann, can be applied generally. The use of preheated blast (350° to 400°C.) and other proposals have been put forward in order to facilitate the removal of the slag.

Endeavours have been made to extend the range of fuels gasified to those of a high ash content on the one hand and to those of a high volatile content on the other hand, in the latter case by combining retort and producer.

Attempts to improve the thermal efficiency of the process have been numerous and have ranged from the addition of steam to the blast to the installation of waste-heat boilers and to blast preheating in heat interchangers. The latter installation constitutes a serious source of danger, a point which has not always received due attention.

The loss of efficiency through dust and fliers is serious, and can be avoided. Dry fuel should be screened before charging. The recovered dust can be introduced at the tuyeres, where it is mostly burnt, while the smaller fuel can be gasified in separate breeze producers of the Flesh-Winkler type.

The use of oxygen constitutes a new phase in producer gas practice and is not confined to ash fusion producers, which, however, benefit from it more than other types on account of the high temperatures required in the ash zone.

Possible Future Developments

Lürmann's original suggestion of using steam in the gasification of fuels for the purpose of increasing the thermal efficiency of the process has left it open as to whether it should be added to the air blast, either continuously or intermittently, or whether it should be introduced separately above the ordinary tuyeres level. The latter method has been adopted in most cases, but is not the best way because of the quenching effect of the relatively cold steam on the fuel so that a large proportion of the steam passes through the fuel bed undecomposed. If, however, the steam is introduced with the blast, it is preheated by the passage through the combustion zone and thereby absorbs enough sensible heat to maintain the temperature of the reaction zone sufficiently high to ensure a high yield of CO and H_2. This method, however, entails the risk of cooling the hearth unduly, and

hence renders the tapping of the slag difficult, if not impossible. The difficulty is overcome in the two-zone producer, to which preheated air blast is supplied to the bottom of the hearth and an air-steam mixture—also preheated—at some 8 in. to 12 in. above it. The effect produced by the use of steam in the gasification of fuels is well known from the performance of mechanical producers so that the results for ash fusion producers can be calculated with reasonable accuracy. An air blast containing 20% of steam gives a reaction temperature of 700°C. and a gas exit temperature of 500° to 600°C., thus similar to that of mechanical producers. The gas has a calorific value of 1,163 cal./cu.m. (122 B.Th.U./cu.ft.), while the steam decomposition is 85.9%.

Screening and Dust Extraction

The loss of process efficiency through the carry-over of small fuel and dust by the gas is a serious loss which can be overcome to a large extent by using screened fuel and by the installation of dust extractors before the scrubbers. The small fuel and dust recovered can be utilised in three different ways. It can be pulverised and used for steam raising or for the preheating of the air blast; it can be ground and gasified in pulverised fuel producers; it can be gasified in breeze producers of the Flesh-Winkler type. Dust extractors can be designed as heat interchangers, the heat recovered being used for the superheating of steam rather than the preheating of the blast for reasons of safety. In this way a high overall thermal efficiency of up to 90% can be obtained, justifying hopes of realising the long cherished idea of electric power stations operated by gas producers and gas turbines.

Water gas generators of present-day design probably reach their maximum throughput with 500 kg. of fuel (coke) per sq. m./hr. (102 lb./sq. ft./hr.), although a figure of 800 kg. (163 lb.) has been recorded for a specially designed producer (Pintch-Brassert) when supplied with selected hard furnace coke. The ash fusion point is always the limiting factor so that ash fusion producers have a definite advantage in this respect, and hence possess distinct prospects as water gas generators. The throughput of fuel should be much higher than the above figures without loss of efficiency, when the blast is preheated. The use of oxygen is not essential, although a moderate amount admitted to the hearth would facilitate the operation of the process, without adding materially to the cost of production.

The ash fusion producer operated at pressures above the atmosphere offers definite advantages for the production of both water gas and synthesis gas. The removal of the slag under pressure is, of course, impossible, but a number of devices have been suggested to overcome this difficulty, such as the addition of a pressure chamber at the tap hole (Brit. Patent 602,986).

As the result of the foregoing study the conclusion is drawn that the ash fusion producer is still in its infancy but that it possesses many attractive features for water gas and synthesis generation either with or without the use of oxygen.

Gas in France

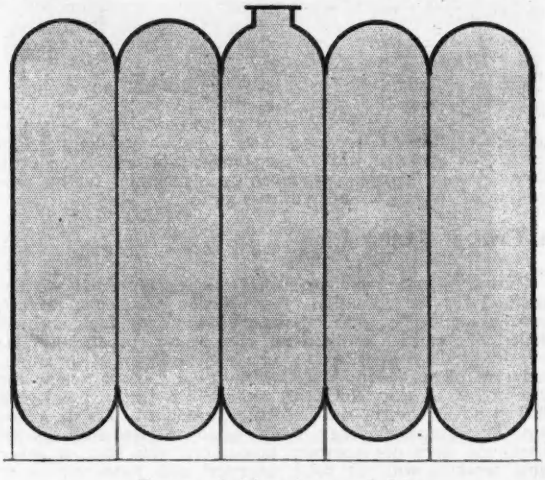
From Our Own Correspondent

THE gas grid is growing in France—'round each centre of production, the threads of the immense spider's web which, in a relatively short time, will cover the whole of the territory, on the lines of what has been already realised in the field of electricity.' These developments and the purchase of growing volumes of gas from outside sources raise a number of problems and particularly that of the measurement of gas volumes under extremely variable conditions of temperature and pressure. The A.T.G. has announced a competition, the conditions of which are published in the April *Journal des Usines à Gaz*, for the invention of an automatic corrector to be applied to large volumetric gas meters. 100,000 frs. is offered for the best design deposited before September 1, 1950, and 200,000 frs. for a prototype apparatus submitted within six months following the decision of the jury on the design.

In the same issue is reported a paper by M. L. de Brouwer, Technical Adviser to Gazelec, Belgium, on the problem of the adaptation of production and storage to varying demands, daily, weekly, and seasonal. The treatment of the subject follows familiar lines. Daily variations will be taken up by gasholders. These will be placed at distribution centres when the volume distributed exceeds 12,000 cu.m. (420,000 cu.ft.) daily. Centres of lower demand will be fed through district governors from holders in the nearest manufacturing centre. Weekly variations and particularly the Sunday reduction will be compensated for by corresponding variations in production in apparatus possessing the necessary flexibility such as water gas plant; in the second place by pressure in the feeder mains; and finally, if these are insufficient, by the construction of new holders. Seasonal variations can only be met by production plant with great flexibility, a minimum of labour cost, and a capital cost per units of capacity as low as possible. A novelty is a pressure holder of the unusual design reproduced herewith. It is suggested for pressures not exceeding 28 lb./sq. in. It is recognised that the spherical holder is the lightest possible per unit capacity but it is found that by reason of the special tools required for its construction its price is about the same as the cylindrical holder or the special 'corrugated' design illustrated.

M. Emile Chatanay describes apparatus for the automatic regulation of water gas plant obviating the necessity for a large relief gasholder. To appreciate it the article with its drawings needs to be read in full.

In the May issue the *Journal des Usines à Gaz* returns to the subject of industrial architecture in the first instalment of 'Notes on the Architecture of Gasworks' by M. Georges Combet, Director-General of Gaz de France. He begins with an attempt to define industrial architecture. His attitude is the same as that of M. Veillon whose book is now in the press. Describing some of the early attempts at aesthetic industrial construction which aimed at beautifying the works of the engineer, M. Combet goes on: 'However desirable it may be to build a fine works, the industrialist must not forget

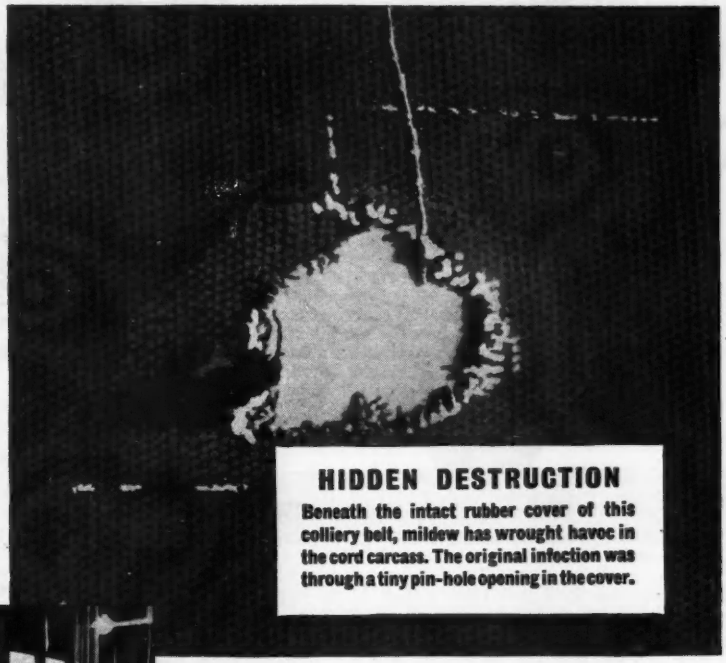


Pressure holder of unusual design.

that his vocation is to reduce the cost of his product. All useless expenditure contributing nothing definite to the economy of exploitation must remain, in his eyes, illicit. There can be no industrial architecture, properly speaking, if the architect is not faithful to the spirit of the programme. A factory is not a palace. Its beauty cannot be separated from its utility. Superfluous elements inserted in its economy add nothing to its aesthetic value. At the same time this is no excuse for laziness. It is not easy to build the cheapest possible factory. All who have had experience in the working-out of industrial projects—and, more generally, in the practice of research in all fields—know that the simplest solutions, and

MILDEW was a menace

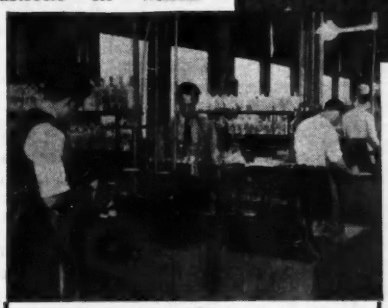
PIONEER WORK BY GOODYEAR RESEARCH TEAM CONQUERS DEADLY BELT-DESTROYING FUNGUS



HIDDEN DESTRUCTION

Beneath the intact rubber cover of this colliery belt, mildew has wrought havoc in the cord carcass. The original infection was through a tiny pin-hole opening in the cover.

Mildew has always been the arch-enemy of conveyor belting — the cancerous infection that, beneath a belt's perfectly intact rubber cover, can reduce the cord duck to soft pulpy ruin in the course of a few months. The reason for this is that the mildew spore flourishes in the very conditions in which conveyor installations often work—darkness, dampness, lack of ventilation, uniform and moderate temperature, and during prolonged periods of idleness — as in day-shift-only factories and seasonal sugar-beet refineries.



Isolating the Fungicidal Agent

These Chemists, working in one corner of the huge Goodyear Laboratory, succeeded, after months of painstaking effort, in isolating the only agent yet discovered that inhibits the development of the mildew spore.

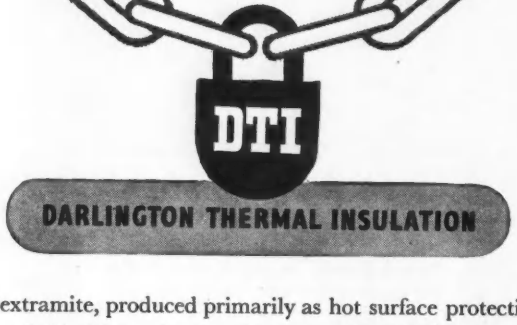
Obviously, the conditions in which conveyor belts work are unlikely to change, so the problem could only be solved by the discovery of a mildew inhibiting agent. In the absence of any officially sponsored work, the Goodyear Company undertook the work themselves as part of their normal service to clients. They gave their research chemists the task of isolating a fungicidal agent with which to treat the cord plies of all their belts, to protect them from the ravages of mildew infection. After long months of experiment this was done. The next task was to give the fungicidal agent a thorough test, in all operating conditions and on all types of belting. This, too, required many months of patient work by the Goodyear scientists; but, here again success crowned their efforts. It was proved conclusively that the new fungus-defying agent was completely effective in all circumstances. Since then, every Goodyear belt has been impregnated with this inhibiting agent as a normal part of production routine. As a result, every Goodyear belt installation is impervious to attack by mildew, and can be relied upon to give long trouble-free service.

ANOTHER OF NATURE'S HOSTILE FORCES HAS BEEN CONQUERED BY

GOODYEAR

INDUSTRIAL RUBBER PRODUCTS

Darlington High Temperature Insulation



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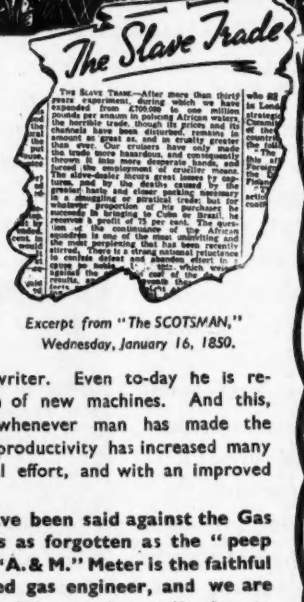
The Slave Trade



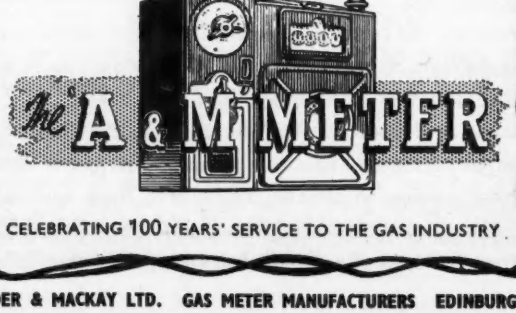
THE SLAVE TRADE.—After more than thirty years experiment, during which we have expended from £700,000 to one million pounds per annum in policing African waters, the horrible trade, though its prices and its channels have been disturbed, remains in amount as great as, and in cruelty greater than ever. Our cruisers have only rendered the trade more hazardous, and consequently thrown it into more desperate hands, and forced the employment of cruiller vessels. The slave-dealer incurs great losses by captures, paid by the deaths caused by the present hasty and closer packing necessary in a smuggling or piratical trade; but for whatever proportion of his purchases he succeeds in bringing to Cuba or Brazil he receives a profit of 75 per cent. The question of the continuance of the African squadron is one of the most interesting and the most perplexing that has been recently stirred. There is a strong national reluctance to confess defeat and abandon effort to ... which ... against the ... cost of the ... results, the ... who fill ... in Lagos ... strategic ... Channel ... country ... of the ... this ... Foreign ... the ... Fleet ... action ... coast.

Excerpt from "The SCOTSMAN," Wednesday, January 16, 1850.

MAN has ever been his own worst enemy; that has often been proved by his resistance to the introduction of the machine.

In 1743 he fought against the innovation of the power loom—in 1845 against the sewing machine — in 1882 against the typewriter. Even to-day he is resisting the introduction of new machines. And this, despite the fact that whenever man has made the machine his slave, his productivity has increased many times with less physical effort, and with an improved standard of living.

Whatever may have been said against the Gas Meter 100 years ago is as forgotten as the "peep of gas." To-day the "A. & M." Meter is the faithful geni of the enlightened gas engineer, and we are rightly proud of our 100 years' contribution to the betterment of mankind.



CELEBRATING 100 YEARS' SERVICE TO THE GAS INDUSTRY

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apparently the easiest, are often the most difficult to discover.' M. Combet compares the well-designed industrial construction to the elegant solution of a mathematical problem. There is the 'economy of means' which we admire in the simplicity of an ingenious piece of mechanism, in the perfect adaptation of a tool to its purpose and the exact sequence of movements of the user to produce the greatest effect with the least expenditure of energy—in the use of words, to express the most when saying the least.

M. Combet puts forward a conception of industrial architecture which must be coherent (which alone may resolve the implicit contradiction of the very words, industrial aesthetic, which alone permits the industrialist to seek, without secret remorse, to construct a fine works with a beauty resulting from exactitude in the conception, simplicity, economy of means and perfect adaptation of the structure to its purpose; which puts forward a specific definition of the term (the essential economy of the project is the touchstone which distinguishes true industrial art, a fine works, from one with an aesthetic mask, decorative or monumental architecture applied to industry), and, in practice, which permits the architect and the engineer to collaborate closely, animated by a single idea to which each brings his own contribution according to his aptitude and knowledge.

Safety Measures

The same issue carries a full-length paper on safety in the gas industry by M. Le Palasier, Chief of that section of Gaz de France. The subject is treated in very general terms. The effective personnel of Gaz de France is 38,000, of whom 14,000 are employed as workmen at production or distribution centres, 16,000 on distribution, and 8,000 on administration. In 1948 the number of serious accidents, defined by incapacity for 20 days or more, was 759, of which 12 were fatal. Gas poisoning cases were five in number, two resulting from leakage of producer gas, one from water gas, one from town gas (at the changing of a consumer's meter), and one from benzole vapour escaping from a road tanker. The importance is stressed of securing the co-operation of workpeople in safety precautions. Gaz de France is organised in eight divisions. In each division an engineer is designated specially to interest himself in safety precautions; he is in liaison with, on the one hand, the central administrative department appointed with this duty and, on the other hand, with the committees of hygiene and safety of the several works and distribution centres on which employees are represented. The several categories of accidents in the works, in the distribution systems, and on the consumers' premises are analysed.

A committee of research into the radiation from flames was set up a little more than a year ago to co-ordinate and collate the scientific analysis of the transmission of heat in furnaces. In the majority of cases this is effected by radiation and the committee is principally concerned with the study of radiated heat. The programme of research is of fundamental interest to the basic industries. It embraces industrial tests in view of immediate problems arising in practice, researches on the semi-industrial scale either purely industrial or purely scientific, and laboratory work on the intrinsic character of flames. Some details of these are given. Technicians of Great Britain Holland, and France are members of the committee; they represent for Great Britain some 15 organisations among which the gas industry is *not* included. An experimental installation has been set up at Ijmuiden where results obtained during 1949 have given great satisfaction. A report is expected shortly.

Gas Week

Gas Week, 1950, was held in Paris under the presidency of M. E. Biard, President of the Association Technique de l'Industrie du Gaz en France. Eight lectures were delivered of which brief abstracts are reported in the May issue of the *Journal des Usines à Gaz*. M. Delbourg spoke on calorimetry and the control of gas quality; he referred to four different types of calorimeter, concluding with a brief description of its own control burner (*Journal* of May 3). M. Marchasson spoke on the regulation of industrial appliances with some results of a campaign of maintenance in Paris. Development in industrial gas had been considerable but must be stepped up still more if the programme of Gaz de France to double its output in the next 10 years was to be accomplished. To this end it was indispensable to ensure that existing apparatus was well maintained and to verify periodically its correct adjustment. Three squads had been created provided with mobile laboratories whose instrumental equipment is described. No fewer than 167 installations were visited in the recent campaign. These examples have shown that it is often possible without major modifications to improve results and increase the satisfaction of clients. The position of gas in Switzerland was described by M. Kern, of Geneva; consumption has risen from 226 mill. cu.m. in 1930 to 277 in 1940 and 299 in 1949.

M. Ruault recounted 20 years' experience of gas central heating in Paris. From 1937 improvements in technique, special tariffs, and campaigns of publicity raised the number of boilers in use from 2,200 to 7,128 in 1939. The war stabilised the number of installations at about 8,000, but since 1945 there has been a veritable craze for gas heating so that it has been necessary to limit the response to those installations which present the best conditions for economical service. This demand must be attributed to good service rendered, since gas prices have maintained parity with those of good quality anthracite. In spite of this restraint the number of boilers installed rose from 8,530 January 1, 1945, to 17,790 January 1, 1950, of which 6,355 were conversions from solid fuel firing and 11,438 specifically designed for gas firing. An examination of statistics shows that the normal consumption during the heating season is of the order of 1,000 times the nominal hourly capacity, though the total consumption over several thousand installations shows a coefficient much less than this, not exceeding 600 in practice. The favour enjoyed by gas heating is certainly largely due to the sure and economical performance of installations in service and this is maintained by a regular system of visits for inspection, regulation, and maintenance. The equipment of the squad of technicians in charge of this service and their procedure is described.

An excellent elementary treatment of the subject of refractories in relation to the production and utilisation of gas was given by M. Yves Letort, Professor in the Ceramics Schools of Sèvres and Director of the National Centre of Ceramic Research. The various types of fireclay, silica, and silico-aluminous refractories were described with their physical properties, while insulating bricks were briefly touched upon. Modern methods of administration and accountancy, and the control of consumers' meters and unaccounted-for gas formed the subjects of two other lectures.

Pitch and Ammonia

In the April *Chimie et Industrie* M. Lecœuvre describes a method of facilitating the handling of pitch. Breaking by hand is extremely difficult and unsatisfactory. The new method consists of spreading the liquid pitch on a rubber conveyor belt and there cooling it by jets of water. The ribbon of pitch breaks up automatically at the end pulley.

In the May issue M.M. Vergnes and Patry contribute an article on the manufacture of ammonia from the natural gas of Saint-Marcet. The synthetic manufacture of ammonia for the production of nitrogenous fertilisers has increased very rapidly in France since the war. The basis of this manufacture is the production of the necessary hydrogen for the synthesis of ammonia. Hitherto the sources of hydrogen were water gas, coke oven gas, and electrolytic hydrogen. But the recent borings in the Pyrenees region have revealed the presence of considerable pockets of gas almost exclusively methane. This methane is being cracked and used for ammonia synthesis in three establishments in this region. The methods employed are described in the article.

FORTHCOMING EXHIBITIONS

The first major exhibition since 1939 to be devoted to the efficient use of coal, electricity, oil, and gas in the home and industry will be held at the City Hall, Deansgate, Manchester, from November 22 to December 2. This Fuel Efficiency Exhibition, which will cover heating, cooking, power, ventilation, and insulation, is being organised under the auspices of the National Smoke Abatement Society, and the Advisory Committee includes representatives from the Coal Utilisation Joint Council and other scientific and research bodies.

The Government, the building industry, and the associated professions are to combine in presenting a Building Week, to be held in Leeds from September 11-16. The primary purpose of the Week is to show the latest developments in building and the ways in which new methods, new materials, and machines can raise output and reduce costs. Another aim of the Week is to stimulate recruitment to the industry, particularly of apprentices. It will also serve to stress the essential unity of the professions associated with building, and to give prominence to their achievements and their significance in the national economy. A site of 150,000 sq. ft. will be utilised.

TRADE NEWS

An illustrated booklet has been published by **W. Sisson and Co., Ltd.**, Gloucester, describing some of the Company's standard steam engines. These include plant for driving exhausters, boosters, and compressors, and high speed engines fitted with patent automatic expansion and compression governor.

A new electrode holder, specially designed for heavy duty electric arc welding and suitable for use with currents up to 500 amp., has been developed by **Murex Welding Processes, Ltd.**, Waltham Cross, Herts. The Murex type 500 electrode holder has special long-life jaws, is light in weight, and can be used for all electrodes from No. 8 gauge to $\frac{1}{4}$ in. dia. All live parts of the holder are shrouded in special shock-proof insulating material, and the hand is well protected by a circular guard.

An important development for industrial users of tubes is described in a booklet published by **Stewarts and Lloyds, Ltd.**, Brook House, Upper Brook Street, London, N.W.1. This comprises the extension of the Company's range of butt welding fittings, used in the construction of all-welded pipeline systems, to match Class 'B' tubes to B.S. 1387. The fittings, 45° and 90° elbows and 180° return bends, are available in sizes from $1\frac{1}{4}$ in. nominal bore (1.29/32 in. o.d.) to 6 in. nominal bore ($6\frac{1}{4}$ in. o.d.) inclusive, the standard radius being $1\frac{1}{2}$ times the nominal bore. Being made to a short radius, pipe work can be fitted into cramped spaces, and in many cases work can be undertaken without lay-out drawings. Using tubes and fittings from stock, hot or cold bending in the shop or at the site is avoided. Distribution is being undertaken for the Company, by Brown and Tawse Tubes, Ltd., and Le Bas Tube Co., Ltd.

The **British Vacuum Cleaner & Engineering Co., Ltd.**, Leatherhead, has described a new example of the comprehensive service to which industrial cleaners can be put for use as pneumatice conveyors. The equipment described consists of a B.V.C. model T.81, 10 h.p. machine, with a cyclone container and rotary valve with necessary two-way sacking chute, and intermediate cyclone container to prevent any possible carry-over of fine dust into the filter. The material being handled in the particular instance referred to is coloured cement which is picked up by means of an aerator tool and a 3 in. metallic hose from drums in which the pigments and cement have been mixed, or from the floor on to which it has been discharged, and is taken out hot. The hose is connected to a pipe-line, which is connected directly into the primary cyclone container. The cement is discharged through one or other of the sacking chutes—controlled by means of a hand operated valve—into paper bags which are placed on a weighing machine. As soon as the sack contains one cwt. and the weighing machine goes down, the valve is thrown over in order that the full bag may be removed and the other bag filled. By the time the first bag has been removed, done up, and a further bag placed in position, the second bag is ready for the same operation.

A catalogue listing the Company's range of number wheels and pinions in tin alloy and plastic has been published by **H. J. Thormann Engineering Co., Ltd.**, 5, Elstree Way, Boreham Wood, Herts.

W. Edwards & Co. (London), Ltd., have published a new 16-page illustrated catalogue. This 'Digest' has brief references, with illustrations and performance figures, to each type of apparatus, selection being simpler than from the bulky main catalogues. It has been compiled as a source of information for workers in research, education and industry of the many high vacuum products manufactured by them. It is an attractive publication in two colours and printed on art paper.

The latest publication (Ref. F.D.8) from the **Morgan Crucible Co., Ltd.**, Battersea Church Road, London, S.W.11, describes the melting of small quantities of cast iron in Morgan crucible furnaces. Two types of furnaces are illustrated, the central axis tilting and the lift-out, both of which can be fired by oil, gas or coke, and accompanied by melting performance figures. This method provides a flexibility of performance and output unattainable with larger and more expensive installations.

A new catalogue of oxygen cutting and profiling machines has been published by **Hancock & Co. (Engineers), Ltd.**, Croydon, pioneers in the development of the oxygen-gas cutting machine. A feature of the non-backfiring burner in the Hancock machine is the remote control to the oxygen and fuel gas (town gas, acetylene, or propane) valves incorporated in the burner head. Besides the three machines (Universal, Simplex and Longitudinal) mentioned in the catalogue there are over 30 other types which cover the majority of requirements for shaping plates, steel sections, and tubes for most engineering purposes, and the Company has in production several specialised machines designed for customers' individual needs.

A demonstration of the Schori method of sand blasting, zinc spraying, and painting of the water circulating pipes at the Carrington Power Station, Manchester, took place recently. The demonstration was carried out by the Schori Metallising Process, Ltd.

The process is, essentially, a method of applying either metal or plastic coatings to almost any clean surface for protection against various forms of corrosion. It is also widely used for applying special durable coatings which are decorative as well as protective. Most metals, including high melting-point ones, many alloys, and a wide range of plastics are used. These materials, in powder form, are flame-sprayed by the Schori pistol. The flame plasticises the powder which is projected by compressed air, at high velocity, on to the surface to be treated. A dense coating can be built up, with perfect adhesion, to any reasonable thickness in this way and a full measure of protection is afforded under severe conditions and over a very long period.

It should be stated that this is not a 'hot' process. Plastics and metals such as zinc and aluminium can be sprayed on to wood, fabrics, and even paper without the slightest heat damage.

Research on Dust and Fumes.—The Joint Iron Council, in association with the Council of the Ironfoundry Associations, has decided to intensify work on problems of dust and fumes in ironfoundries, and to provide an advisory service on how these may best be dealt with in foundry practice. The work is being carried out through the British Cast Iron Research Association which is largely financed by the Joint Iron Council. A special committee of the Research Association, entitled the Foundry Atmospheres Committee, is supervising the work. Close collaboration is being maintained with the Joint Standing Committee on Conditions in Ironfoundries set up by the Factory Department of the Ministry of Labour.

Domestic Utilisation of Gas

By NORMAN S. SMITH, B.Sc., Assoc.M.Inst.Gas E., and R. N. Le FEVRE, M.Inst.Gas E., A.I.Mech.E.

Since it was first published in 1932, *Domestic Utilisation of Gas* has been regarded as a standard text book. Continued demand has necessitated its reprinting and periodical revision. During the post-war period in particular great progress has been made in the development of appliances and the efficient utilisation of gas. Moreover, there is a new and large scale of students today, needing just such information as *D.U.G.* provides. To meet these demands *Gas Service* has arranged to publish *Domestic Utilisation of Gas*, completely revised and brought up to date, as a series of articles, the first of which appears in the August issue. It is anticipated that the response will be considerable, and those interested in obtaining copies for themselves or their staff are urged to inform the Subscription Manager of their requirements.

published in **Gas Service** *each month*

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ONX SUPER 83 BRAND **FIRE CEMENT**

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"We are pleased with results obtained after using ONX Super '83' Brand.
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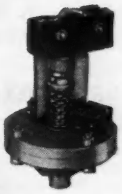

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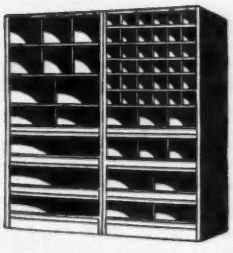

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The "Gas Journal" is published every Wednesday, price 1/-; by post 1/2d.

Subscription Rates: Home and Empire :- 45/- per annum; Foreign :- 52/- per annum. (Both payable in advance.) A copy o fthe "Gas Journal" Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements: All small classified advertisements are charged at 1/6 per line (approx. 7 words) - minimum charge 7/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

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APPLICATIONS are invited for the post of LECTURER in Fuel Technology in the Department of Coal Gas and Fuel Industries, at a salary on the scale £550 – £50—£1,100. The initial salary will be determined in relation to the qualifications and experience of the successful candidate. Industrial experience will be an advantage.

Applications should reach the Registrar, The University, Leeds, 2 (from whom further particulars may be obtained), not later than September 16, 1950.

RESEARCH KITCHEN DEMONSTRATOR. Applications are invited for a position with a leading firm of gas cooker manufacturers in the Birmingham area. The position is for a lady who has had considerable experience in cooking and who must possess a flair for compiling and testing new recipes. The work will also involve some demonstrating to outside organisations. The successful applicant should hold a recognised diploma in Domestic Science or equivalent qualifications.

Applications, marked T.R.31/9, giving full details of age, experience and salary required, to No. 9922, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

WALES GAS BOARD

KIDWELLY UNDERTAKING.

APPLICATIONS are invited from suitably qualified and experienced persons for the position of ENGINEER AND MANAGER of the Kidwelly Undertaking of the Wales Gas Board.

The undertaking is in process of expansion from gas sales of 10 mill. cu.ft. per annum to 30 mill. cu.ft. per annum due to industrial load and applicants must be qualified to deal with all aspects of this development.

Applicants will be required to give evidence that they have had sound experience in the operation and control of horizontal retort settings and gasworks plant to produce gas of constant composition. Experience in low pressure distribution and the development of domestic sales will be a desirable qualification.

The commencing salary will be £475 per annum plus a fixed quantity of free solid fuel and gas. A house will be available at a reasonable rental.

Applications, giving details of age, qualifications and experience, together with the names of two referees, should be submitted to the undersigned not later than August 26, 1950.

C. B. MAWER,
Secretary.

Wales Gas Board,
1-2, Windsor Place,
Cardiff.
Cir. No. 79(S).

APPLICATIONS are invited for position of MAINTENANCE ENGINEER for large engineering works in South Yorkshire. Applicants should be about 40 years of age and must have practical experience of steam boiler plants, hot water heating installations, air compressors, heavy machine tools, mechanised foundry plant, electric overhead, mobile and derrick cranes. Good organising ability essential.

The position would be superannuated.

A house is available for successful applicant.

Apply in writing, stating age, education, qualifications and experience, to No. 9923, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

NORTH EASTERN GAS BOARD

BRADFORD GROUP.

APPLICATIONS are invited for the position of CHEMIST at the Birkshall Works, Bradford. Applicants should have a sound practical and theoretical knowledge of chemistry, preferably in connection with the gas industry. A degree in chemistry, or equivalent qualification, will be an advantage.

The commencing salary will be not less than £475 per annum.

The successful candidate may be required to pass a medical examination. The appointment will be subject to such superannuation regulations as may in due course be made.

Applications, stating age and giving full details of qualifications and experience, together with the names of two referees, should be received by the Group General Manager, Britannia House, Bradford, not later than September 12, 1950.

J. C. GARDNER,
Secretary.

Bridge Street,
Leeds, 2.

EASTERN GAS BOARD

CAMBRIDGE DIVISION.

CAMBRIDGE DISTRICT.

APPLICATIONS are invited for the position of JUNIOR TECHNICAL ASSISTANT to Cambridge District Gas Undertaking.

In addition to experience of carbonising and carburetted water gas plants, applicants must have a good knowledge of routine chemical testing necessary on modern gasworks.

The post is graded in accordance with Grade IV of the National Joint Council for Gas Staffs Salary Scales and the salary will be within the range of £360-£420 per annum, the commencing figure being dependent upon experience and qualifications.

Applications, stating age, qualifications, training and experience, together with the names of three persons to whom reference may be made should reach the undersigned on or before August 23, 1950.

E. H. WINCH,
Engineer and Manager.

Eastern Gas Board,
(Cambridge Division),
Cambridge District,
Gasworks,
Newmarket Road,
Cambridge.

(Classified advertisements continued on Supplement 4)

APPOINTMENTS VACANT (ctd.)

SOUTH EASTERN GAS BOARD

EAST SURREY DIVISION.

HOME SERVICE ADVISER.

APPLICATIONS are invited for the position of a HOME SERVICE ADVISER in the East Surrey Division.

Applicants must be over 21 years of age and possess a diploma in Domestic Science. They should also have had experience in giving demonstrations to the public.

The commencing salary will be within Grade IV (Metropolitan Area) of the Salary Scales of the National Joint Council for Gas Staffs in respect of Female Administrative, Professional and Technical Staffs (£224-£360 per annum).

Applications, in writing (quoting reference VAC/86), should contain details covering present occupation, age, qualifications and experience, &c., and should reach the undersigned not later than 14 days after the publication of this notice.

R. J. McCRAE,
Personnel Manager.

Katharine Street,
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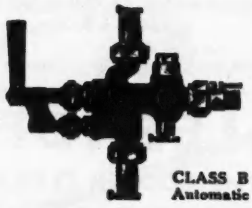

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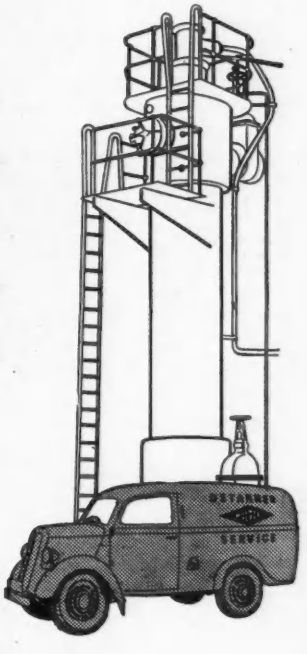

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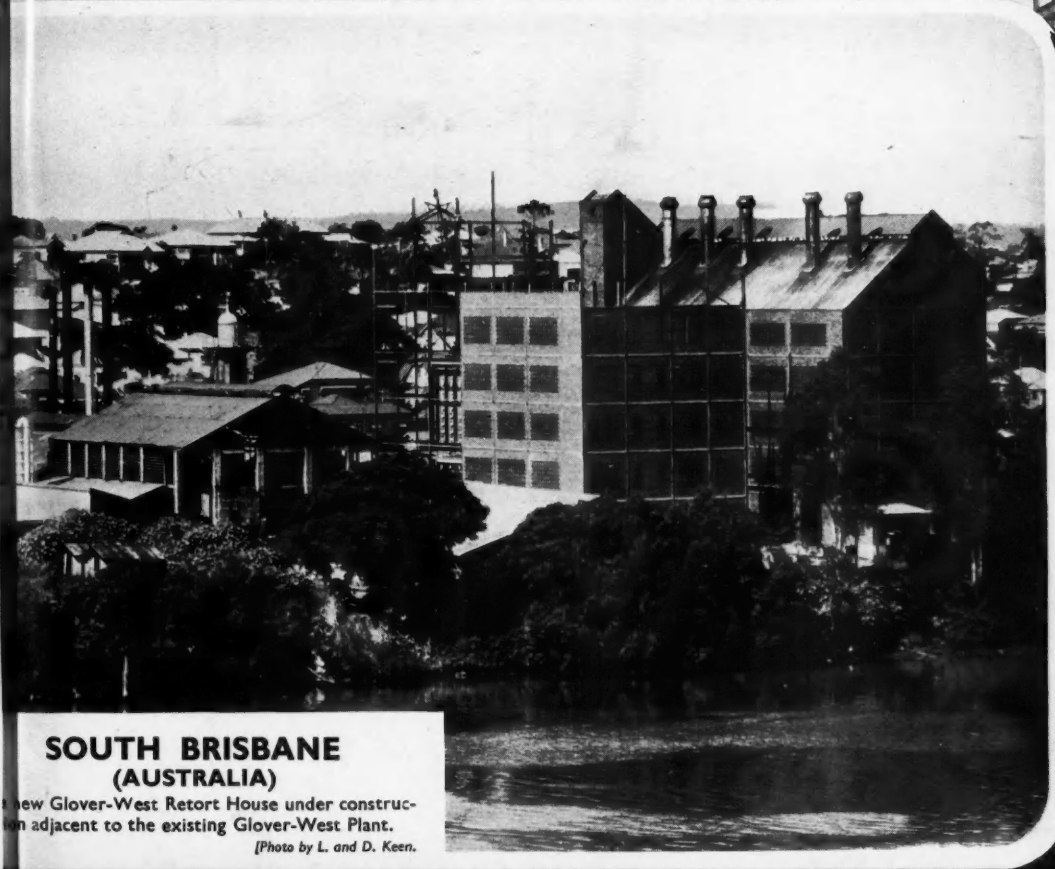

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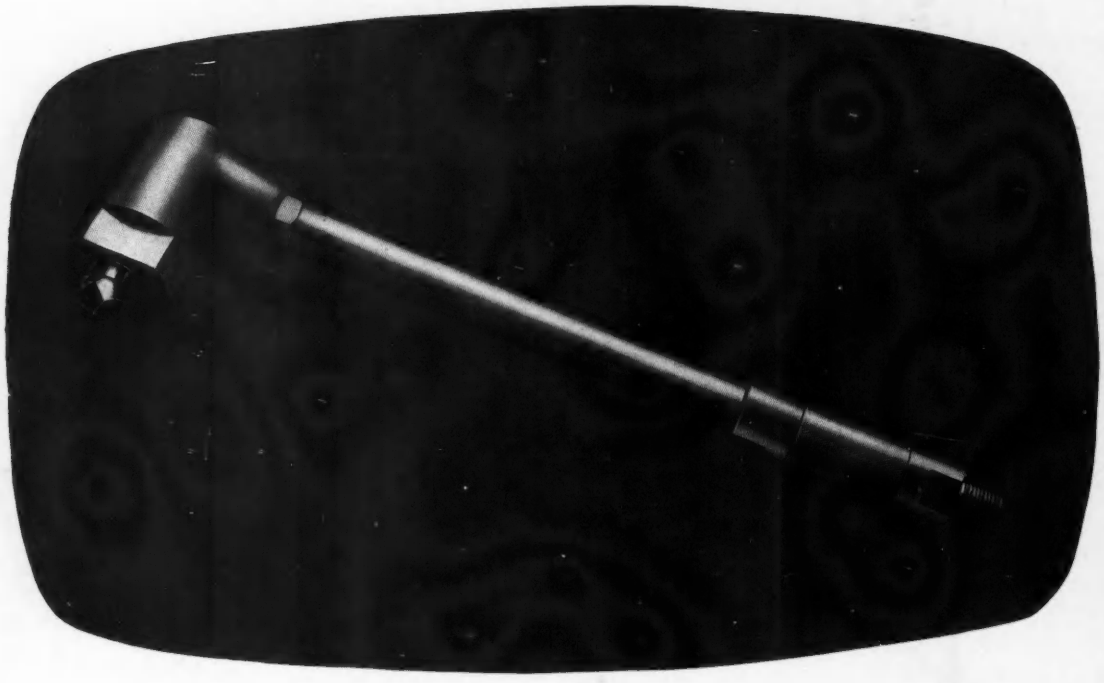

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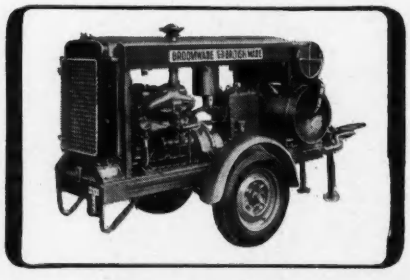

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